MITSUBISHI ELECTRIC

Changes for the Better

SPLIT-TYPE AIR CONDITIONERS

Revision E:
• MUZ-GA24NA and MUY-GA24NA have been added.

Please void OB451 REVISED EDITION-D.

OUTDOOR UNIT
SERVICE MANUAL

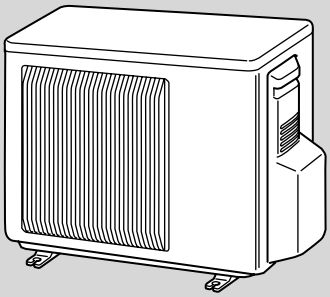
HFC utilized
R410A

No. OB451
REVISED EDITION-E

Models

MUZ-A09NA,- [1],- [U1],- [U2]
MUZ-A12NA,- [U1]
MUZ-A15NA,- [U1]
MUZ-A17NA,- [U1]
MUZ-A24NA,- [1],- [U1],- [U2]
MUY-A15NA
MUY-A17NA
MUY-A24NA,- [1],- [U1],- [U2]
MUZ-GA24NA,- [U1]
MUY-GA24NA

Indoor unit service manual
MSZ-A•NA Series (OB450)
MSZ-GA•NA Series (OB450)



MUZ-A09/12/15/17NA
MUY-A15/17NA

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NOTE:
RoHS compliant products have <G> mark on the spec name plate. For servicing of RoHS compliant products, refer to the PARTS LIST (RoHS compliant).

Mr.SLIM™

Revision A:
• MUZ-A09NA -U2 and MUZ-A09NA -1 have been added.

Revision B:
• 10-5. ”Check of outdoor thermistors” has been corrected.

Revision C:
• 10-6. ”Test point diagram and voltage” has been corrected.
10-6.3. ”Outdoor electronic control P.C. board”, the chart of thermistor has been corrected.

Revision D:
• MUZ-A24NA - 1, MUZ-A24NA - U2 and MUY-A24NA - 1 have been added.

Revision E:
• MUZ-GA24NA and MUY-GA24NA have been added.

1 TECHNICAL CHANGES

MUZ09UN → MUZ-A09NA MUZ12UN → MUZ-A12NA
MUH15TN → MUZ-A15NA MUH17TN → MUZ-A17NA
MUH24WN → MUZ-A24NA
MU15TN → MUY-A15NA MU17TN → MUY-A17NA
MU24WN → MUY-A24NA

1. Outdoor unit model has been changed.
2. Control method between indoor and outdoor unit has been changed.
3. Refrigerant has been changed. (R22 → R410A)
4. Fan motor has been changed. (AC → DC)
5. Compressor has been changed. (AC → DC)

MUZ-A09NA → MUZ-A09NA - 1
MUZ-A09NA - U1 → MUZ-A09NA - U2

1. Refrigerant system diagram has been changed.

MUZ-A24NA → MUZ-A24NA - 1
MUZ-A24NA - U1 → MUZ-A24NA - U2
MUY-A24NA → MUY-A24NA - 1

1. Wiring diagram has been changed.

MUZ-A24NA - 1 → MUZ-GA24NA
MUZ-A24NA - U2 → MUZ-GA24NA - U1
MUY-A24NA - 1 → MUY-GA24NA

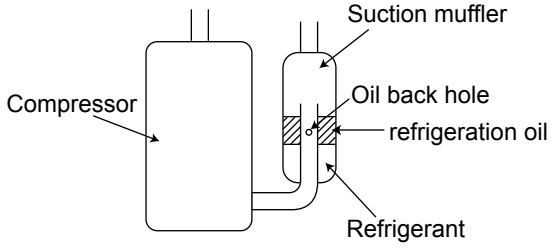
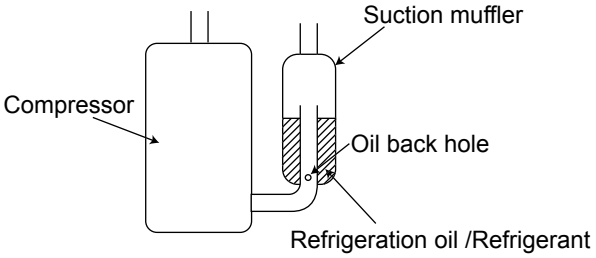
1. Compressor has been changed. (SNB130FPDH → SNB130FQBH)
2. Wiring diagram has been changed.
3. Fan motor has been changed.
4. ELECTRONIC CONTROL P.C. Board has been changed.

INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

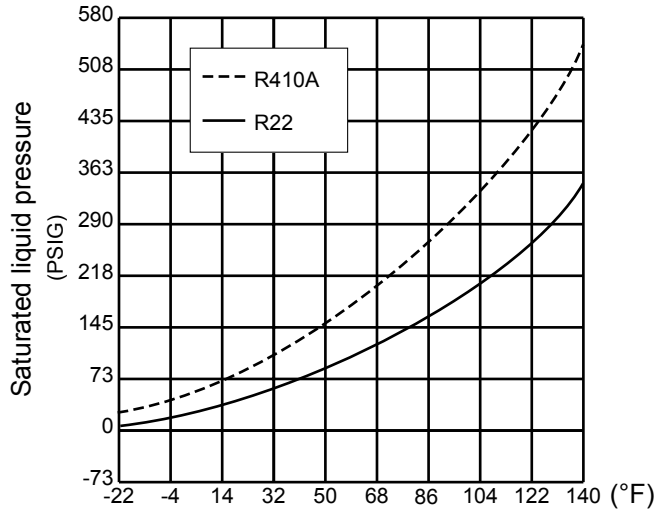
• This room air conditioner adopts HFC refrigerant (R410A) which never destroys the ozone layer.
• Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.
① As R410A has working pressure approximate 1.6 times as high as that of R22, some special tools and piping parts/materials are required. Refer to the table below.
② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)
④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

		New refrigerant	Previous refrigerant
Refrigerant	Refrigerant	R410A	R22
	Composition (Ratio)	HFC-32: HFC-125 (50%: 50%)	R22 (100%)
	Refrigerant handling	Pseudo-azeotropic refrigerant	Single refrigerant
	Chlorine	Not included	Included
	Safety group (ASHRAE)	A1 / A1	A1
	Molecular weight	72.6	86.5
	Boiling point (°F)	-60.5	-41.4
	Steam pressure [77°F] (PSIG)	225.82	136.34
	Saturated steam density [77°F] (lb./ft.^{3})	3.995	2.772
	Combustibility	Non combustible	Non combustible
	ODP ※1	0	0.055
	GWP ※2	1730	1700
	Refrigerant charge method	From liquid phase in cylinder	Gas phase
	Additional charge on leakage	Possible	Possible
Refrigeration oil	Kind	Incompatible oil	Compatible oil
	Color	None	Light yellow
	Smell	None	None

※1: Ozone Depletion Potential: based on CFC-11
※2: Global Warming Potential: based on CO2

	New Specification	Current Specification
Compressor	The incompatible refrigeration oil easily separates from refrigerant and is in the upper layer inside the suction muffler. Raising position of the oil back hole enables to back the refrigeration oil of the upper layer to flow back to the compressor. 	Since refrigerant and refrigeration oil are compatible with each other, refrigeration oil goes back to the compressor through the lower position oil back hole. 

Conversion chart of refrigerant temperature and pressure



1. Tools dedicated for the air conditioner with R410A refrigerant

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measurement range of existing gauges.
Charge hose	No	Hose material have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	1/4 in. and 3/8 in.
	No	1/2 in. and 5/8 in.
Flare tool	Yes	Clamp bar hole has been enlarged to reinforce the spring strength in the tool.
Flare gauge	New	Provided for flaring work (to be used with R22 flare tool).
Vacuum pump adapter	New	Provided to prevent the back flow of oil. This adapter enables you to use vacuum pumps.
Electronic scale for refrigerant charging	New	It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization

No: Not Substitutable for R410A Yes: Substitutable for R410A

2. Refrigerant piping

① Specifications

Use the copper or copper-alloy seamless pipes for refrigerant that meet the following specifications.

Outside diameter (in.)	Wall thickness (in.)	Insulation material
1/4	0.0315	Heat resisting foam plastic Specific gravity 0.045 Thickness 0.315 in.
3/8	0.0315	
1/2	0.0315	
5/8	0.0394	

② Flaring work and flare nut

Flaring work for R410A pipe differs from that for R22 pipe.

For details of flaring work, refer to Installation manual “FLARING WORK”.

Pipe diameter (in.)	Dimension of flare nut mm (in.)	
	R410A	R22
1/4	17 (11/16)	17 (11/16)
3/8	22 (7/8)	22 (7/8)
1/2	26 (1-1/32)	24 (15/16)
5/8	29 (1-5/32)	27 (1-1/16)

3. Refrigerant oil

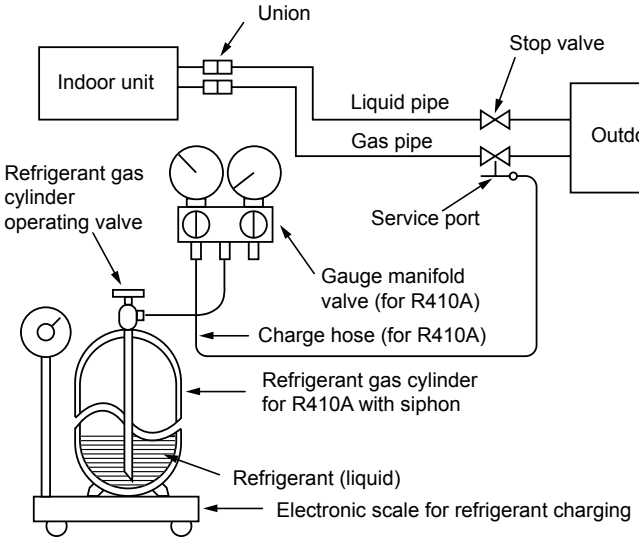
Apply the special refrigeration oil (accessories: packed with indoor unit) to the flare and the union seat surfaces.

4. Air purge

- Do not discharge the refrigerant into the atmosphere.
  Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- Use the vacuum pump for air purging for the purpose of environmental protection.

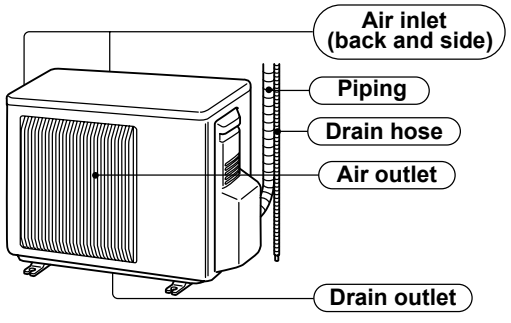
5. Additional charge

For additional charging, charge the refrigerant from liquid phase of the gas cylinder.
If the refrigerant is charged from the gas phase, composition change may occur in the refrigerant inside the cylinder and the outdoor unit. In this case, capacity of the refrigeration cycle decreases or normal operation can be impossible. However, charging the liquid refrigerant all at once may cause the compressor to be locked. Thus, charge the refrigerant slowly.

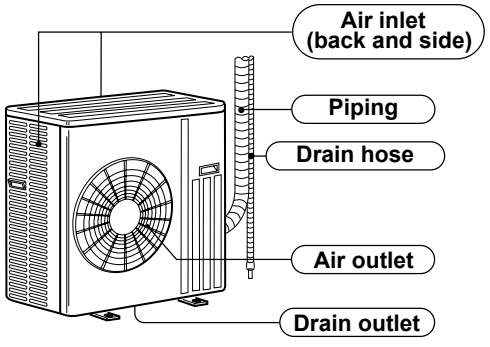


2 PART NAMES AND FUNCTIONS

MUZ-A09NA MUZ-A15NA MUY-A15NA
MUZ-A12NA MUZ-A17NA MUY-A17NA



MUZ-A24NA MUY-A24NA
MUZ-GA24NA MUY-GA24NA



3 SPECIFICATION

Item \ Model			MSZ-A09NA		MSZ-A12NA
Capacity Rated (Minimum-Maximum)	Cooling ❄1	Btu/h	9,000 (5,500-9,000)		12,000 (5,700-12,000)
	Heating 47 ❄1	Btu/h	10,900 (5,200-12,600)		13,600 (5,200-13,600)
Capacity	Heating 17 ❄2	Btu/h	7,700		8,300
Power consumption Rated (Minimum-Maximum)	Cooling ❄1	W	690 (390-690)		1,170 (395-1,170)
	Heating 47 ❄1	W	860 (350-1,100)		1,160 (350-1,160)
Power consumption	Heating 17 ❄2	W	880		930
EER ❄1 [SEER] ❄3	Cooling		13.0 [17.0]		10.3 [17.0]
HSPF IV(V) ❄4	Heating		8.2 (7.1)		8.2 (7.1)
COP	Heating ❄1		3.71		3.44
Outdoor unit model			**MUZ-A09NA** **MUZ-A09NA - U1**	**MUZ-A09NA - 1** **MUZ-A09NA - U2**	**MUZ-A12NA**
Power supply	V , phase , Hz		208/230, 1, 60		
Max. fuse size (time delay)		A	15		
Min. circuit ampacity		A	12		
Fan motor		F.L.A	0.52		
Compressor	Model		KNB092FPAH		
	Winding resistance (at 68˚F) Ω		0.49		
	R.L.A		7.8		
	L.R.A		9.2		
Refrigerant control			Liner expansion valve		
Sound level ❄1		dB(A)	48		
Defrost method			Reverse cycle		
Dimensions	W	in.	31-1/2		
	D	in.	11-1/4		
	H	in.	21-5/8		
Weight		lb.	82	75	82
External finish			Munsell 3Y 7.8/1.1		
Remote controller			Wireless type		
Control voltage (by built-in transformer)			12 - 24 VDC		
Refrigerant piping			Not supplied		
Refrigerant pipe size (Min. wall thickness)	Liquid	in.	1/4 (0.0315)		
	Gas	in.	3/8 (0.0315)		
Connection method	Indoor		Flared		
	Outdoor		Flared		
Between the indoor & outdoor units	Height difference	ft.	40		
	Piping length	ft.	65		
Refrigerant charge (R410A)			2 lb. 5 oz.	2 lb.	2 lb. 5 oz.
Refrigeration oil (Model)			NEO22		

NOTE: Test conditions are based on ARI 210/240.

❄1: Rating conditions (Cooling) — Indoor: 80˚FDB, 67˚FWB, Outdoor: 95˚FDB, (75˚FWB) Rated frequency

(Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 47˚FDB, 43˚FWB Rated frequency

❄2: (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 17˚FDB, 15˚FWB Maximum frequency

Item \ Model			MSZ-A15NA	MSY-A15NA	MSZ-A17NA	MSY-A17NA
Capacity Rated (Minimum-Maximum)	Cooling ❋1	Btu/h	15,000 (3,100-15,000)	15,000 (3,100-15,000)	16,200 (3,100-16,200)	16,200 (3,100-16,200)
	Heating 47 ❋1	Btu/h	18,000 (3,400-20,900)	–	20,100 (3,400-20,900)	–
Capacity Rated	Heating 17 ❋2	Btu/h	13,000	–	13,000	–
Power consumption Rated (Minimum-Maximum)	Cooling ❋1	W	1,690 (210-1,690)	1,690 (210-1,690)	2,070 (210-2,070)	2,070 (210-2,070)
	Heating 47 ❋1	W	1,790 (250-2,330)	–	2,150 (250-2,330)	–
Power consumption Rated	Heating 17 ❋2	W	1,740	–	1,740	–
EER ❋1 [SEER] ❋3	Cooling		8.9 [16.0]	8.9 [16.0]	7.8 [16.0]	7.8 [16.0]
HSPF IV(V) ❋4	Heating		8.2 (7.1)	–	8.2 (7.1)	–
COP	Heating ❋1		2.95	–	2.74	–
Outdoor unit model			**MUZ-A15NA**	**MUY-A15NA**	**MUZ-A17NA**	**MUY-A17NA**
Power supply	V , phase , Hz		208/230, 1, 60			
Max. fuse size (time delay)		A	15			
Min. circuit ampacity		A	14			
Fan motor		F.L.A	0.52			
Compressor	Model		SNB130FPDH			
	Winding resistance (at 68˚F) Ω		0.45			
	R.L.A		10.1			
	L.R.A		12			
Refrigerant control			Liner expansion valve			
Sound level ❋1		dB(A)	50	50	52	52
Defrost method			51	—	53	—
Dimensions	W	in.	31-1/2			
	D	in.	11-1/4			
	H	in.	21-5/8			
Weight		lb.	88			
External finish			Munsell 3Y 7.8/1.1			
Remote controller			Wireless type			
Control voltage (by built-in transformer)			12 - 24 VDC			
Refrigerant piping			Not supplied			
Refrigerant pipe size (Min. wall thickness)	Liquid	in.	1/4 (0.0315)			
	Gas	in.	1/2 (0.0315)			
Connection method	Indoor		Flared			
	Outdoor		Flared			
Between the indoor & outdoor units	Height difference	ft.	40			
	Piping length	ft.	65			
Refrigerant charge (R410A)			2 lb. 7 oz.			
Refrigeration oil (Model)			NEO22			

NOTE: Test conditions are based on ARI 210/240.

❋1: Rating conditions (Cooling) — Indoor: 80˚FDB, 67˚FWB, Outdoor: 95˚FDB, (75˚FWB) Rated frequency
(Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 47˚FDB, 43˚FWB Rated frequency

❋2: (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 17˚FDB, 15˚FWB Maximum frequency

Item \ Model			MSZ-A24NA	MSY-A24NA	MSZ-GA24NA	MSY-GA24NA
Capacity Rated Minimum-Maximum)	Cooling ❄1	Btu/h	22,000 (4,400-22,000)	22,000 (4,400-22,000)	22,000 (4,400-22,000)	22,000 (4,400-22,000)
	Heating 47 ❄1	Btu/h	23,200 (3,600-24,400)	—	23,200 (3,600-24,400)	—
Capacity Rated	Heating 17 ❄2	Btu/h	15,200	—	15,200	—
Power consumption Rated (Minimum-Maximum)	Cooling ❄1	W	2,880 (290-2,880)	2,880 (290-2,880)	2,500 (270-2,500)	2,500 (270-2,500)
	Heating 47 ❄1	W	2,350 (260-2,570)	—	2,140 (250-2,520)	—
Power consumption Rated	Heating 17 ❄2	W	1,960	—	1,870	—
EER ❄1 [SEER] ❄3	Cooling		7.6 [16.0]	7.6 [16.0]	8.8 [17.5]	8.8 [17.5]
HSPF IV(V) ❄4	Heating		8.2 (7.1)	—	9.5 (7.1)	—
COP	Heating ❄1		2.89	—	3.17	—
Outdoor unit model			**MUZ-A24NA**	**MUY-A24NA**	**MUZ-GA24NA**	**MUY-GA24NA**
Power supply	V , phase , Hz		208/230, 1, 60			
Max. fuse size (time delay)		A	20			
Min. circuit ampacity		A	17			
Fan motor		F.L.A	0.93			
Compressor	Model		SNB130FPDH		SNB130FQBH	
	Winding resistance (at 68˚F) Ω		0.45		0.98	
	R.L.A		10.1		12.8	
	L.R.A		16.0		16.0	
Refrigerant control			Liner expansion valve			
Sound level ❄1		dB(A)	55			
Defrost method			Reverse cycle			
Dimensions	W	in.	33-1/16			
	D	in.	13			
	H	in.	33-7/16			
Weight		lb.	128		117	
External finish			Munsell 3Y 7.8 1.1			
Remote controller			Wireless type			
Control voltage (by built-in transformer)			12 - 24 VDC			
Refrigerant piping			Not supplied			
Refrigerant pipe size (Min. wall thickness)	Liquid	in.	1/4 (0.0315)			
	Gas	in.	5/8 (0.0394)			
Connection method	Indoor		Flared			
	Outdoor		Flared			
Between the indoor & outdoor units	Height difference	ft.	50			
	Piping length	ft.	100			
Refrigerant charge (R410A)			4 lb.			
Refrigeration oil (Model)			NEO22			

NOTE: Test conditions are based on ARI 210/240.

❄1: Rating conditions (Cooling) — Indoor: 80˚FDB, 67˚FWB, Outdoor: 95˚FDB, (75˚FWB) Rated frequency
(Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 47˚FDB, 43˚FWB Rated frequency

❄2: (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 17˚FDB, 15˚FWB Maximum frequency

Test condition
※3, ※4

	Mode	Test	Indoor air condition (˚F)		Outdoor air condition (˚F)	
			Dry bulb	Wet bulb	Dry bulb	Wet bulb
ARI	SEER (Cooling)	"A" Cooling Steady State at rated compressor Speed	80	67	95	(75)
		"B-2" Cooling Steady State at rated compressor Speed	80	67	82	(65)
		"B-1" Cooling Steady State at minimum compressor Speed	80	67	82	(65)
		Low ambient Cooling Steady State at minimum compressor Speed	80	67	67	(53.5)
		Intermediate Cooling Steady State At Intermediate compressor Speed ※5	80	67	87	(69)
	HSPF (Heating)	Standard Rating-Heating at rated compressor Speed	70	60	47	43
		Low temperature Heating at rated compressor Speed	70	60	17	15
		Max temperature Heating at minimum compressor Speed	70	60	62	56.5
		High temperature Heating at minimum compressor Speed	70	60	47	43
		Frost Accumulation at rated compressor Speed	70	60	35	33
		Frost Accumulation at Intermediate compressor Speed ※5	70	60	35	33

※5: At Intermediate compressor Speed = ("Cooling rated compressor speed" - "minimum compressor speed") / 3 + "minimum compressor speed".

OPERATING RANGE

(1) POWER SUPPLY

	Rated voltage	Guaranteed Voltage (V)
Outdoor unit	208/230 V 1 phase 60 Hz	Min.187 208 230 Max.253

(2) OPERATION

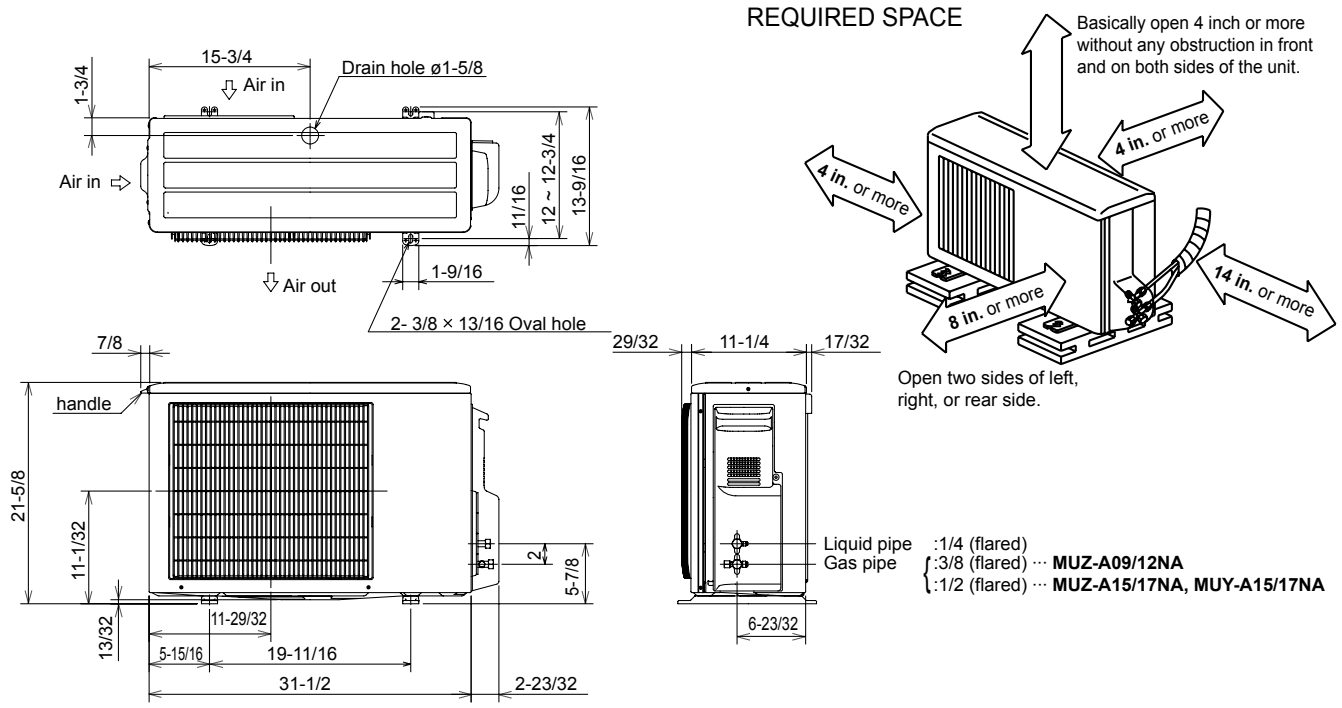
Mode	Condition	Intake air temperature (°F)			
		Indoor		Outdoor	
		DB	WB	DB	WB
Cooling	Standard temperature	80	67	95	—
	Maximum temperature	90	73	115	—
	Minimum temperature	67	57	14	—
	Maximum humidity	78%		—	
Heating	Standard temperature	70	60	47	43
	Maximum temperature	80	67	75	65
	Minimum temperature	70	60	14 5 (**MUZ-GA24**)※	13 4 (**MUZ-GA24**)※

※Except -U model

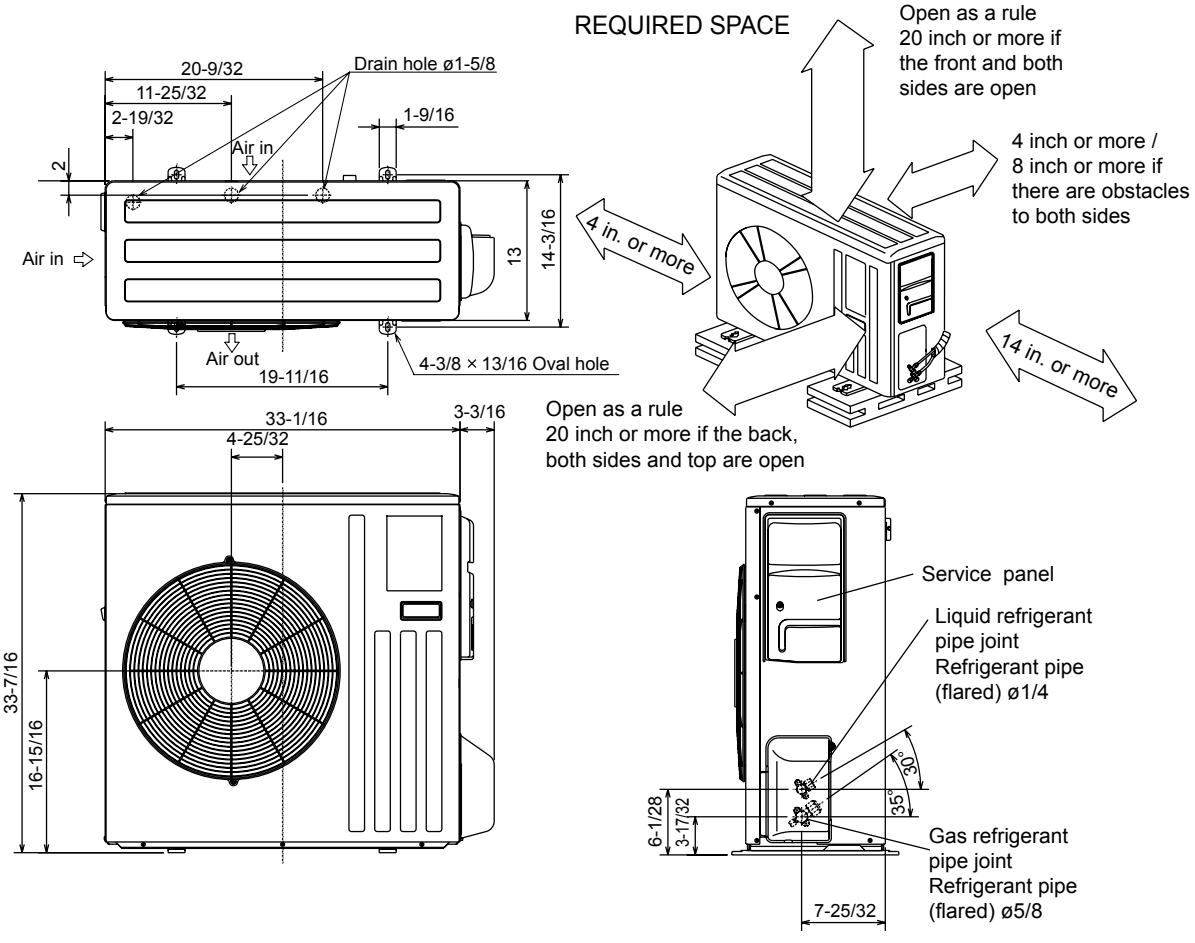
4 OUTLINES AND DIMENSIONS

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

Unit: inch

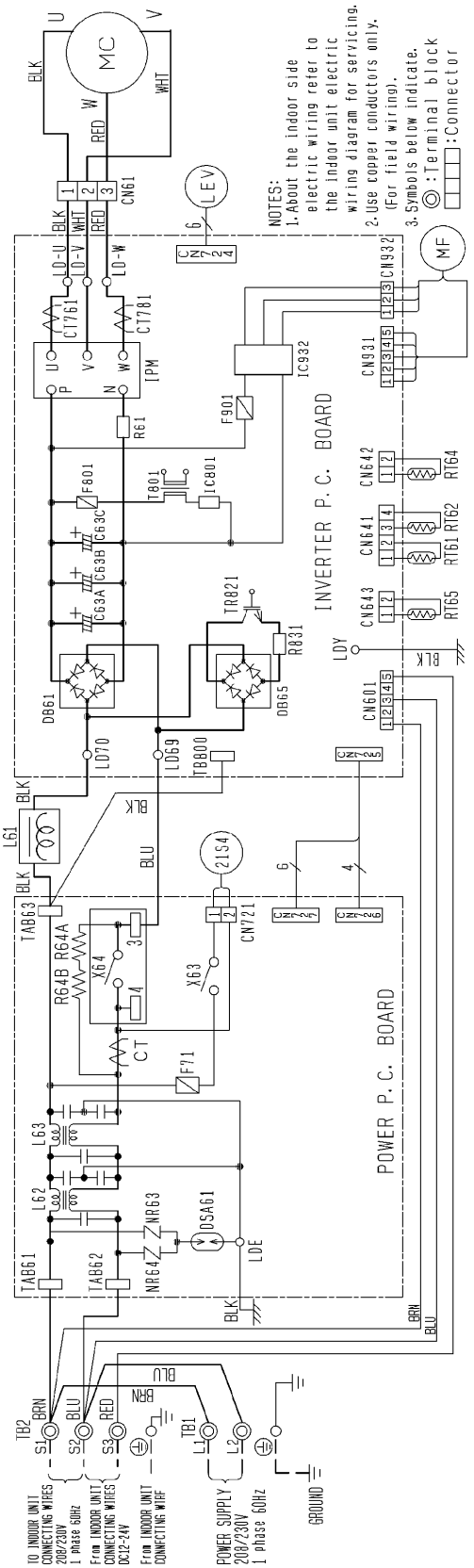


MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA



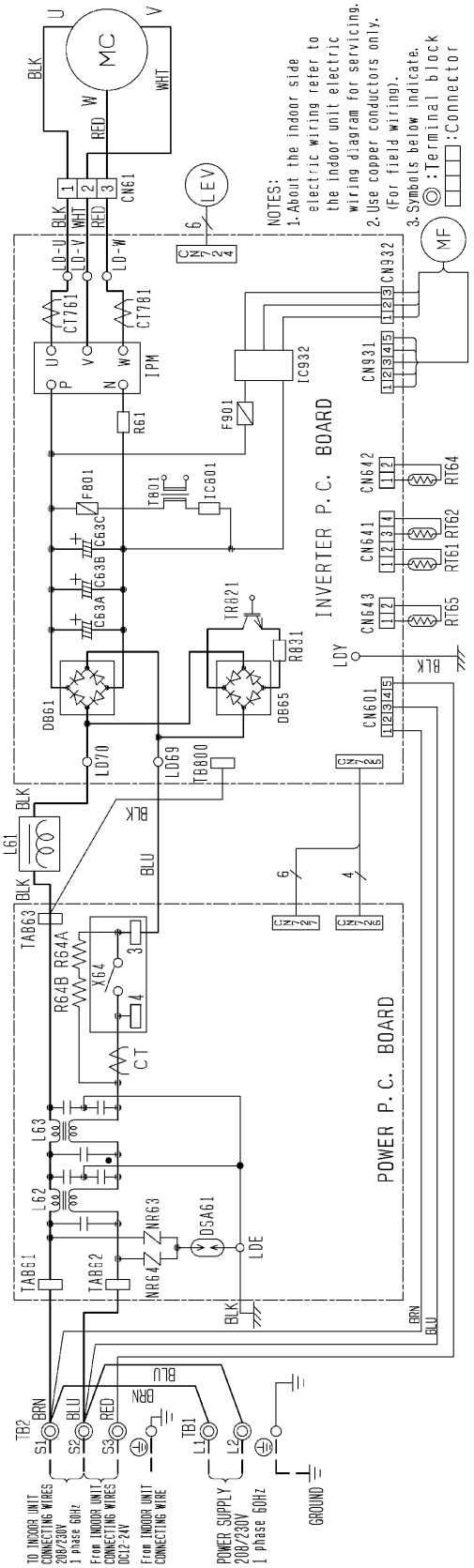
5 WIRING DIAGRAM

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA


NOTES:
1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only. (For field wiring).
3. Symbols below indicate.
◎ : Terminal block
□□□ : Connector
INVERTER P.C. BOARD
POWER P.C. BOARD
IPM
MC
MF
LEV
21S4
CT
TO INDOOR UNIT CONNECTING WIRES 208/230V 1 phase 60Hz
From INDOOR UNIT CONNECTING WIRES DC12-24V
From INDOOR UNIT CONNECTING WIRE
POWER SUPPLY 208/230V 1 phase 60Hz
GROUND

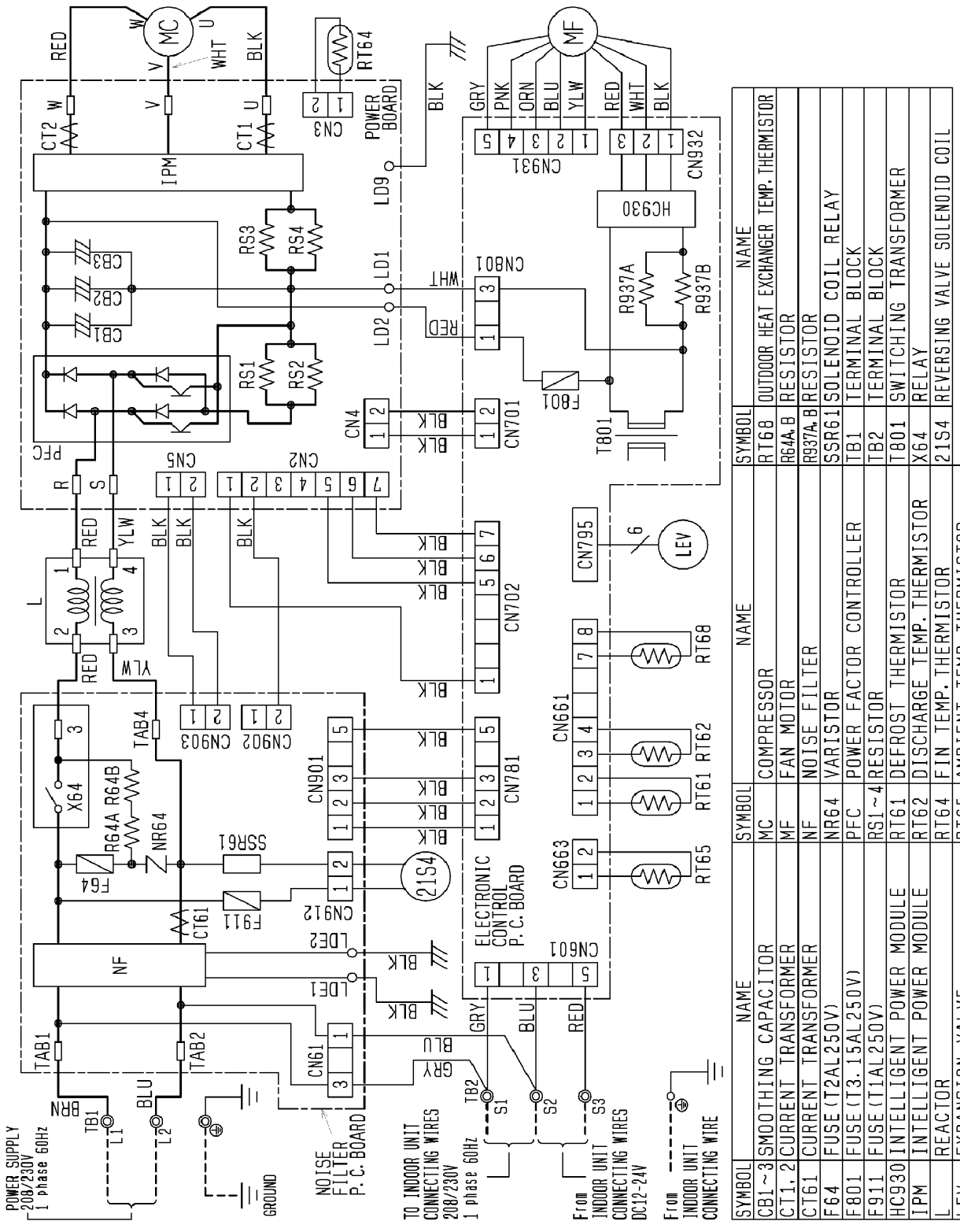
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CT, CT761, CT781	CURRENT TRANSFORMER	L61	REACTOR	R61, R831	CURRENT-DETECTING RESISTOR
C63A, C63B, C63C	SMOOTHING CAPACITOR	L62, L63	CMC COIL	R64A, R64B	CURRENT-LIMITING RESISTOR
DB61, DB65	DIODE MODULE	MC	COMPRESSOR	TB1, TB2	TERMINAL BLOCK
DSA61	SURGE ABSORBER	MF	FAN MOTOR	TR821	SWITCHING POWER TRANSISTOR
F71	FUSE (T3.15AL250V)	NR63, NR64	VARISTOR	T801	SWITCHING TRANSFORMER
F801, F901	FUSE (T3.15AL250V)	RT61	DEFROST THERMISTOR	X63, X64	RELAY
IC801	INTELLIGENT POWER DEVICE	RT62	DISCHARGE TEMP. THERMISTOR	21S4	REVERSING VALVE COIL
IPM, IC932	INTELLIGENT POWER MODULE	RT64	FIN TEMP. THERMISTOR		
LEV	EXPANSION VALVE COIL	RT65	AMBIENT TEMP. THERMISTOR		

MUY-A15NA MUY-A17NA



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CT, CT751, CT781	CURRENT TRANSFORMER	L61	REACTOR	RT65	AMBIENT TEMP. THERMISTOR
C63A, C63B, C63C	SMOOTHING CAPACITOR	L62, L63	CMC COIL	R61, R831	CURRENT-DETECTING RESISTOR
DB61, DB65	DIODE MODULE	MC	COMPRESSOR	R64A, R64B	CURRENT-LIMITING RESISTOR
DSA61	SURGE ABSORBER	MF	FAN MOTOR	TB1, TB2	TERMINAL BLOCK
F801, F901	FUSE (T3.15AL250V)	NR63, NR64	VARISTOR	TR821	SWITCHING POWER TRANSISTOR
IC801	INTELLIGENT POWER DEVICE	RT61	DEFROST THERMISTOR	T801	SWITCHING TRANSFORMER
IPM, IC932	INTELLIGENT POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR	X64	RELAY
LEV	EXPANSION VALVE COIL	RT64	FIN TEMP. THERMISTOR		

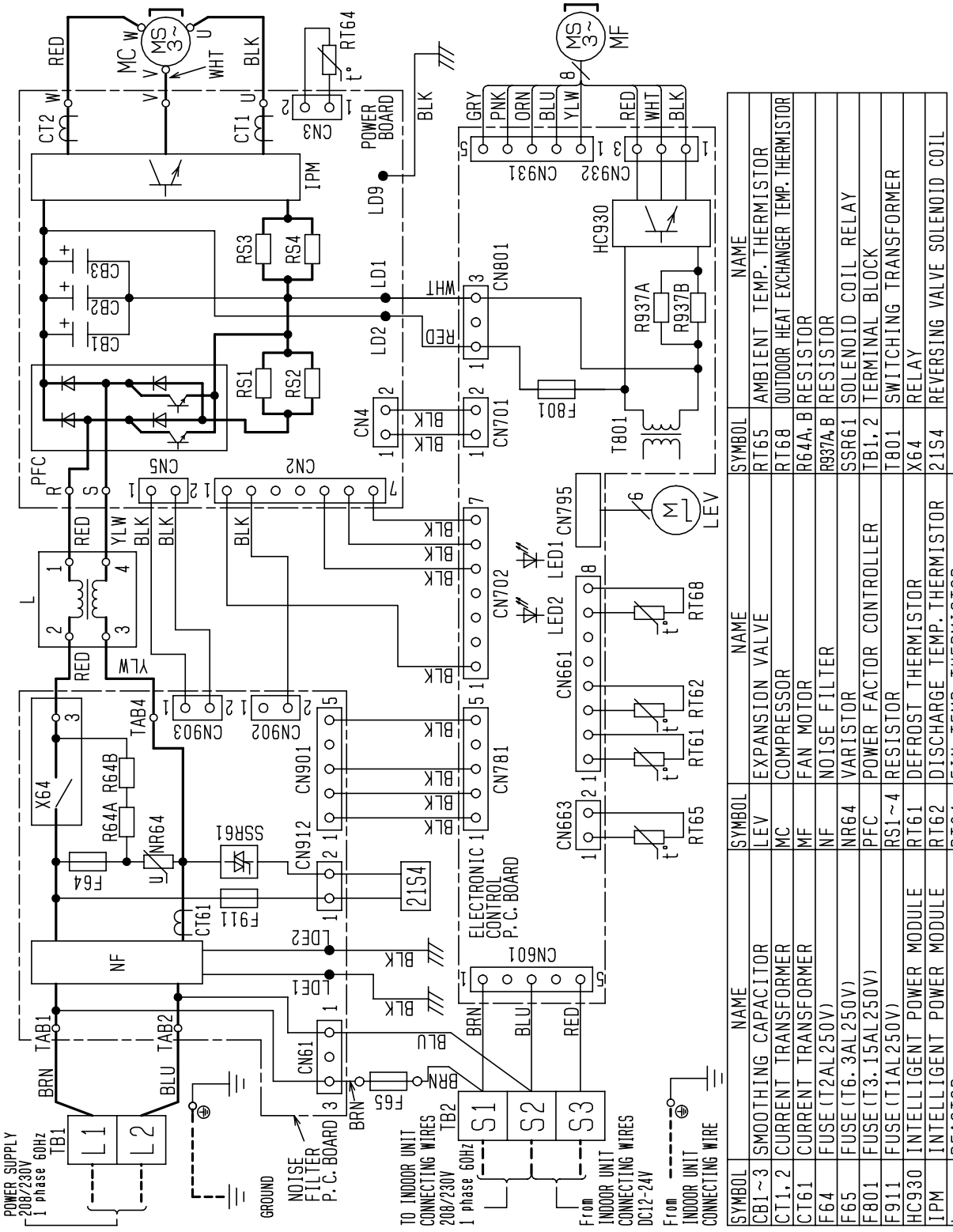
MUZ-A24NA MUZ-A24NA- U1



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR	MC	COMPRESSOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
CT1, 2	CURRENT TRANSFORMER	MF	FAN MOTOR	R64A, B	RESISTOR
CT61	CURRENT TRANSFORMER	NF	NOISE FILTER	R937A, B	RESISTOR
F64	FUSE(T2AL250V)	NR64	VARISTOR	SSR61	SOLENOID COIL RELAY
F801	FUSE(T3.15AL250V)	PFC	POWER FACTOR CONTROLLER	TB1	TERMINAL BLOCK
F911	FUSE(T1AL250V)	RS1~4	RESISTOR	TB2	TERMINAL BLOCK
HC930	INTELLIGENT POWER MODULE	RT61	DEFROST THERMISTOR	T801	SWITCHING TRANSFORMER
IPM	INTELLIGENT POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR	X64	RELAY
L	REACTOR	RT64	FIN TEMP. THERMISTOR	21S4	REVERSING VALVE SOLENOID COIL
LEV	EXPANSION VALVE	RT65	AMBIENT TEMP. THERMISTOR		

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
◎:Terminal block □□:Connector

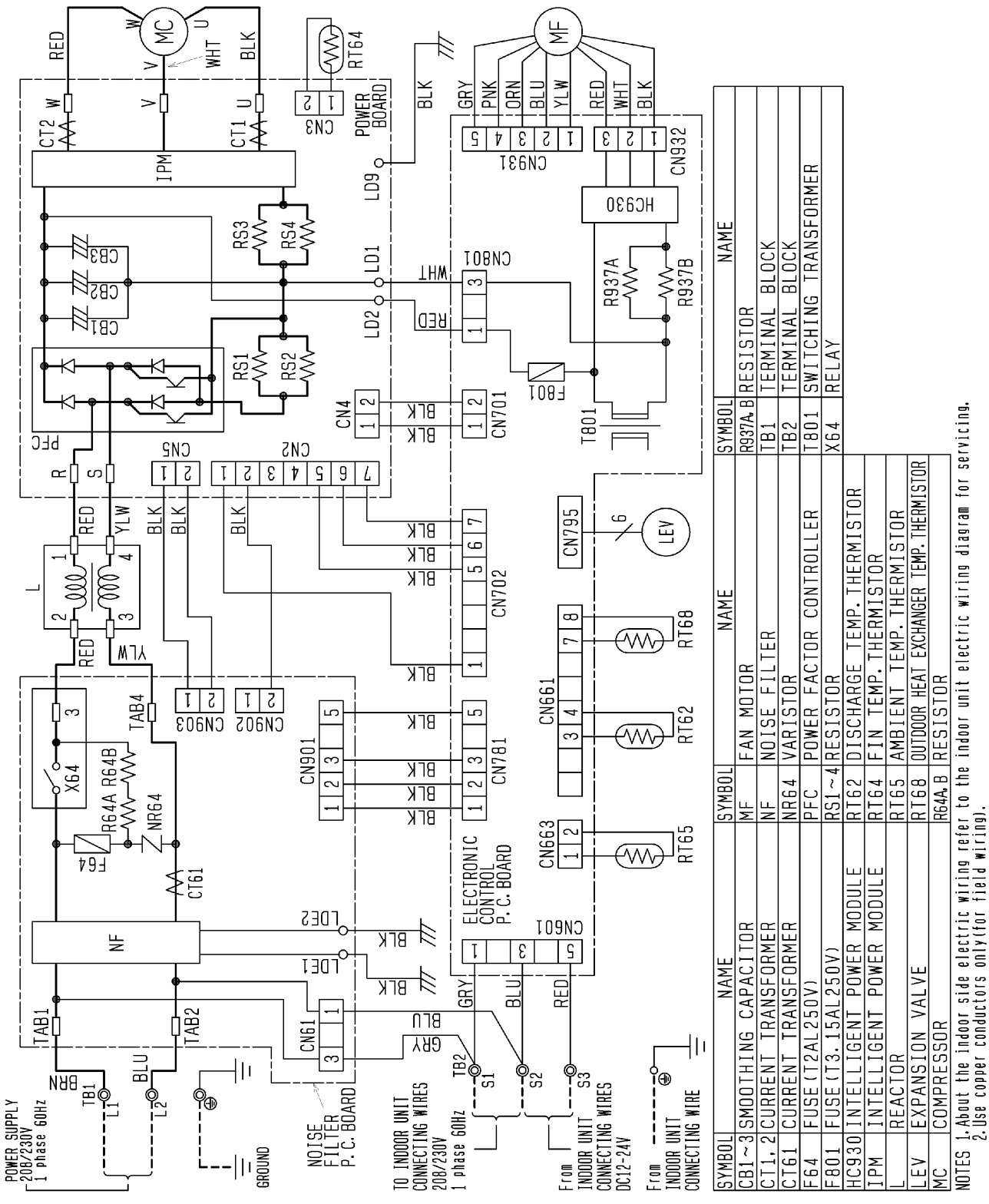
MUZ-A24NA- 1 MUZ-A24NA- U2



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR	LEV	EXPANSION VALVE	RT65	AMBIENT TEMP. THERMISTOR
CT1, 2	CURRENT TRANSFORMER	MC	COMPRESSOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
CT61	CURRENT TRANSFORMER	MF	FAN MOTOR	R64A, B	RESISTOR
F64	FUSE(T2AL250V)	NF	NOISE FILTER	R937A, B	RESISTOR
F65	FUSE(T6.3AL250V)	NR64	VARISTOR	SSR61	SOLENOID COIL RELAY
F801	FUSE(T3.15AL250V)	PFC	POWER FACTOR CONTROLLER	TB1, 2	TERMINAL BLOCK
F911	FUSE(T1AL250V)	RS1~4	RESISTOR	T801	SWITCHING TRANSFORMER
HC930	INTELLIGENT POWER MODULE	RT61	DEFROST THERMISTOR	X64	RELAY
IPM	INTELLIGENT POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR	21S4	REVERSING VALVE SOLENOID COIL
L	REACTOR	RT64	FIN TEMP. THERMISTOR		

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
□□ :Terminal block

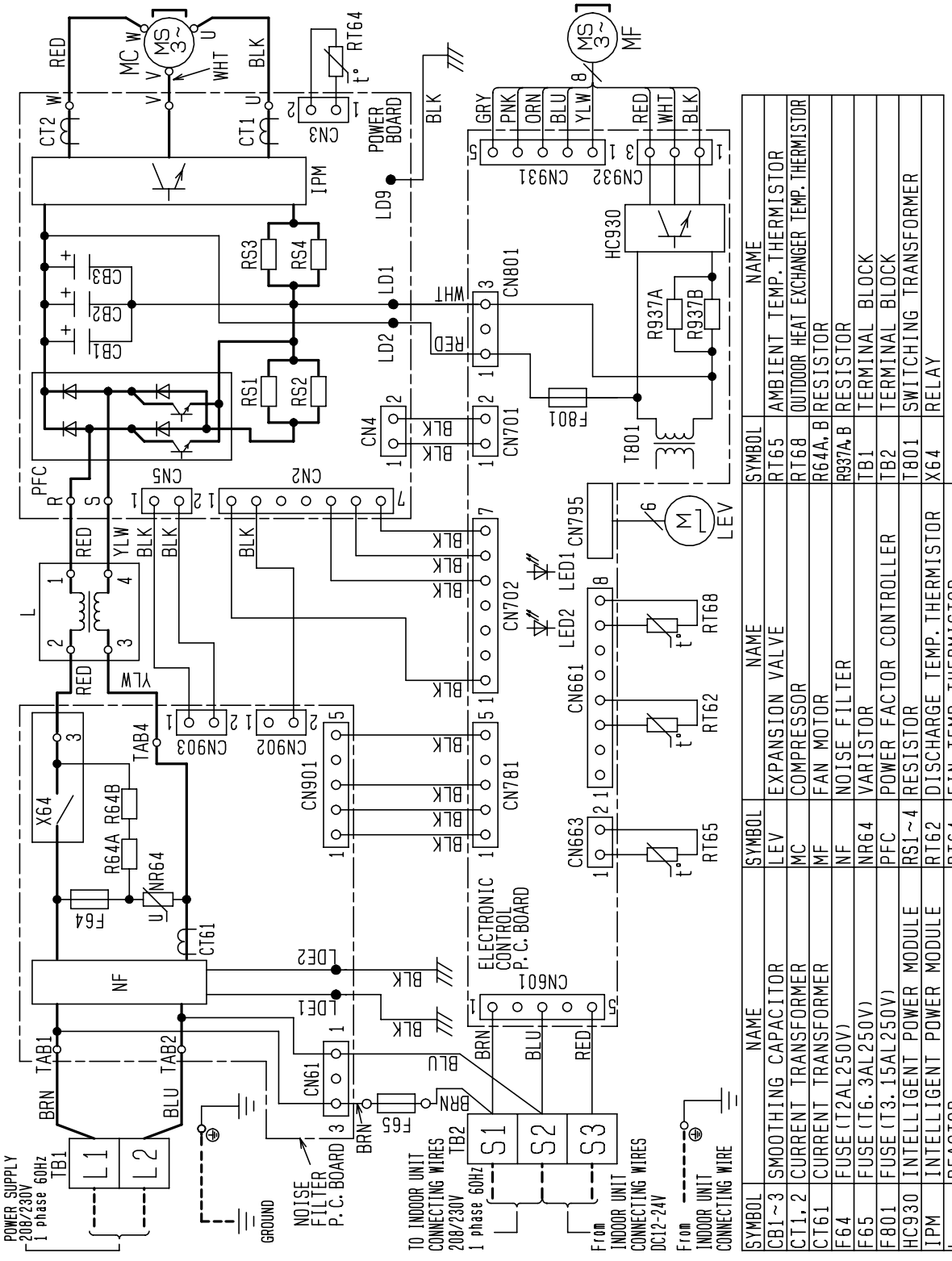
MUY-A24NA



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR	MF	FAN MOTOR	R937A,B	RESISTOR
CT1,2	CURRENT TRANSFORMER	NF	NOISE FILTER	TB1	TERMINAL BLOCK
CT61	CURRENT TRANSFORMER	NR64	VARISTOR	TB2	TERMINAL BLOCK
F64	FUSE(T2AL250V)	PFC	POWER FACTOR CONTROLLER	T801	SWITCHING TRANSFORMER
F801	FUSE(T3.15AL250V)	RS1~4	RESISTOR	X64	RELAY
HC930	INTELLIGENT POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR		
IPM	INTELLIGENT POWER MODULE	RT64	FIN TEMP. THERMISTOR		
L	REACTOR	RT65	AMBIENT TEMP. THERMISTOR		
LEV	EXPANSION VALVE	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR		
MC	COMPRESSOR	R64A,B	RESISTOR		

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
◎:Terminal block □□:Connector

MUY-A24NA- 1



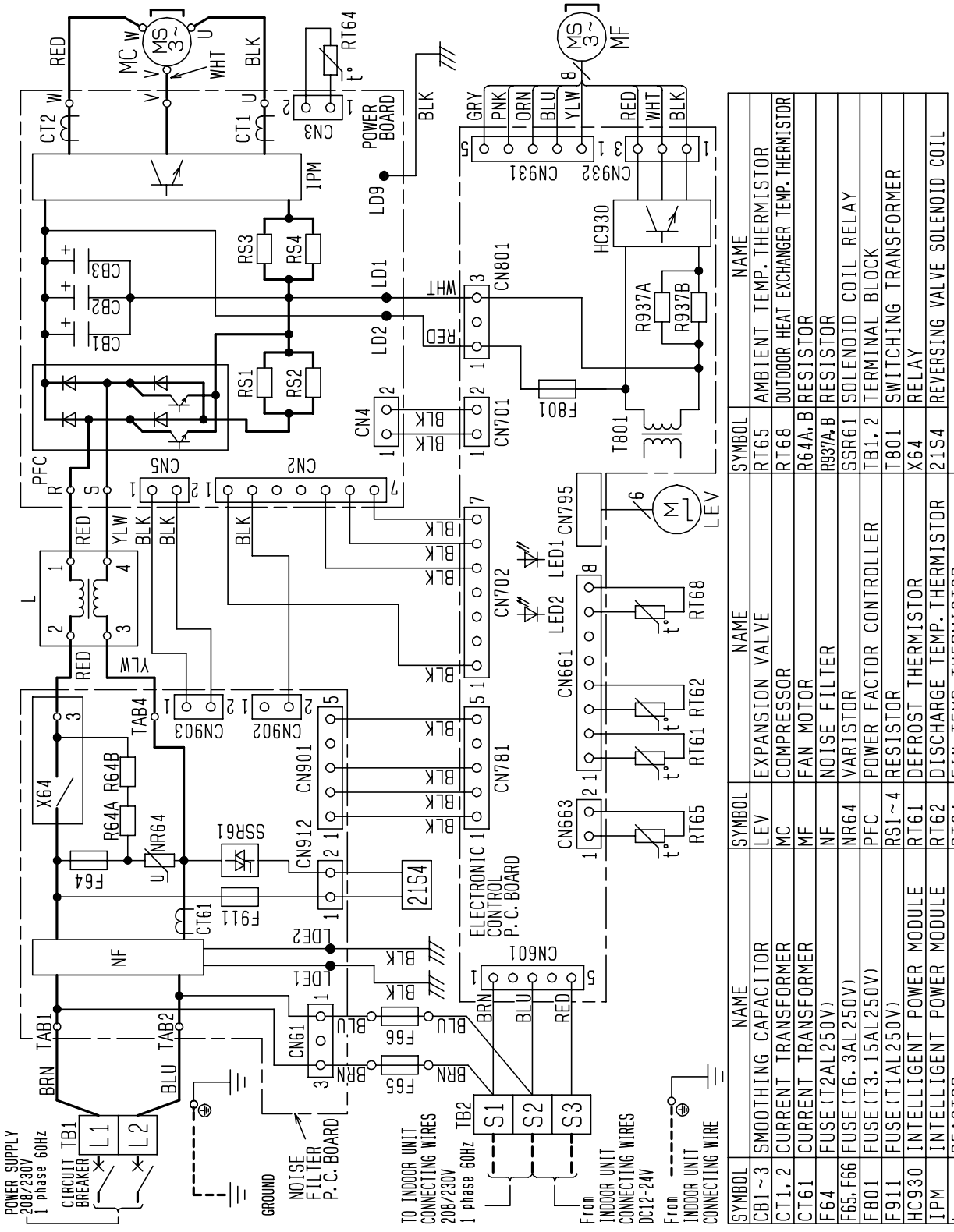
SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR
CT1, 2	CURRENT TRANSFORMER
CT61	CURRENT TRANSFORMER
F64	FUSE(T2AL250V)
F65	FUSE(T6.3AL250V)
F801	FUSE(T3.15AL250V)
HC930	INTELLIGENT POWER MODULE
IPM	INTELLIGENT POWER MODULE
L	REACTOR

SYMBOL	NAME
LEV	EXPANSION VALVE
MC	COMPRESSOR
MF	FAN MOTOR
NF	NOISE FILTER
NR64	VARISTOR
PFC	POWER FACTOR CONTROLLER
RS1~4	RESISTOR
RT62	DISCHARGE TEMP. THERMISTOR
RT64	FIN TEMP. THERMISTOR

SYMBOL	NAME
RT65	AMBIENT TEMP. THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
R64A, B	RESISTOR
R937A, B	RESISTOR
TB1	TERMINAL BLOCK
TB2	TERMINAL BLOCK
T801	SWITCHING TRANSFORMER
X64	RELAY

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
□□□ :Terminal block

MUZ-GA24NA

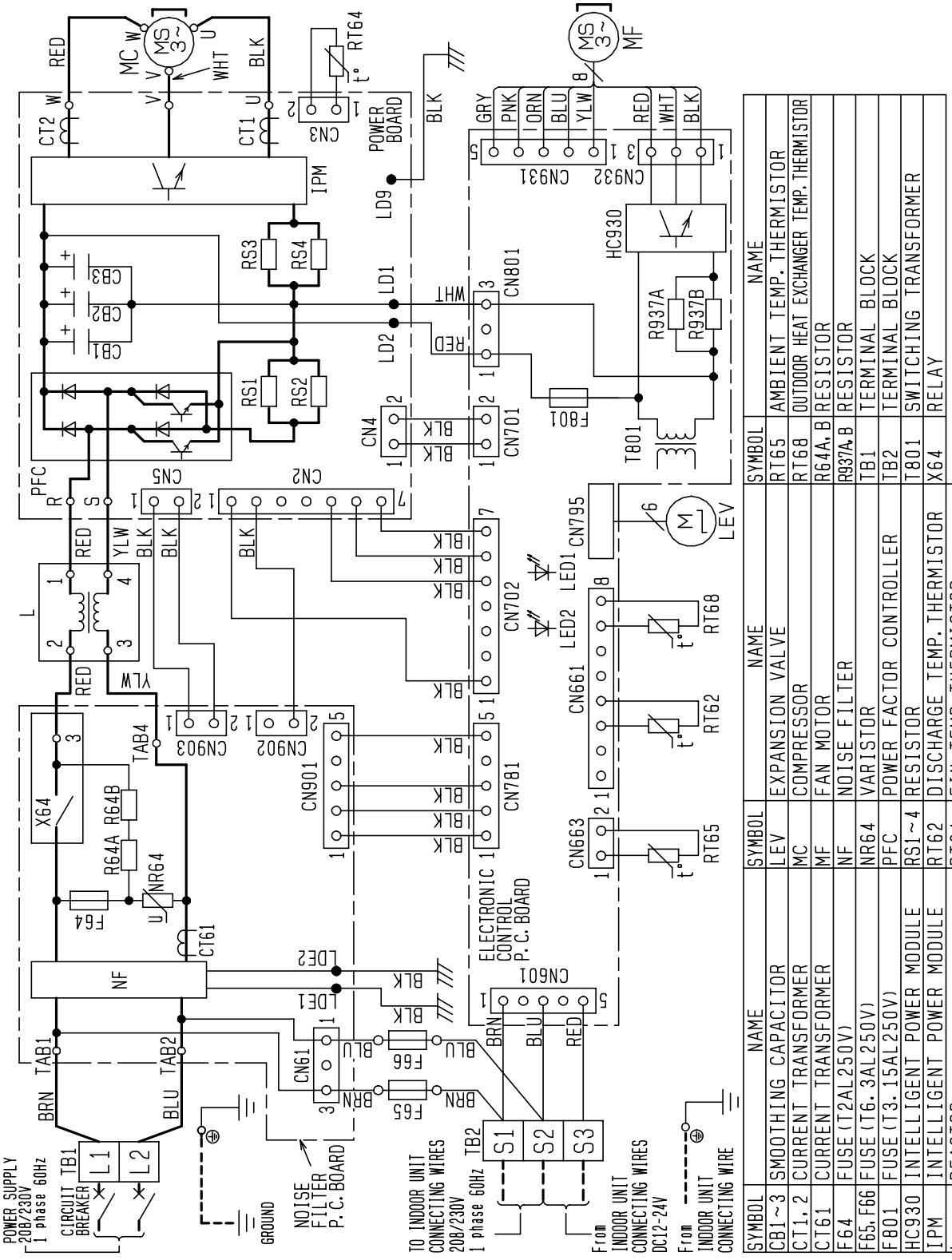


SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR
CT1, 2	CURRENT TRANSFORMER
CT61	CURRENT TRANSFORMER
F64	FUSE(T2AL250V)
F65, F66	FUSE(T6.3AL250V)
F801	FUSE(T3.15AL250V)
F911	FUSE(T1AL250V)
HC930	INTELLIGENT POWER MODULE
IPM	INTELLIGENT POWER MODULE
L	REACTOR

SYMBOL	NAME
LEV	EXPANSION VALVE
MC	COMPRESSOR
MF	FAN MOTOR
NF	NOISE FILTER
NR64	VARISTOR
PFC	POWER FACTOR CONTROLLER
RS1~4	RESISTOR
RT61	DEFROST THERMISTOR
RT62	DISCHARGE TEMP. THERMISTOR
RT64	FIN TEMP. THERMISTOR

SYMBOL	NAME
RT65	AMBIENT TEMP. THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
R64A, B	RESISTOR
R937A, B	RESISTOR
SSR61	SOLENOID COIL RELAY
TB1, 2	TERMINAL BLOCK
T801	SWITCHING TRANSFORMER
X64	RELAY
21S4	REVERSING VALVE SOLENOID COIL

MUY-GA24NA



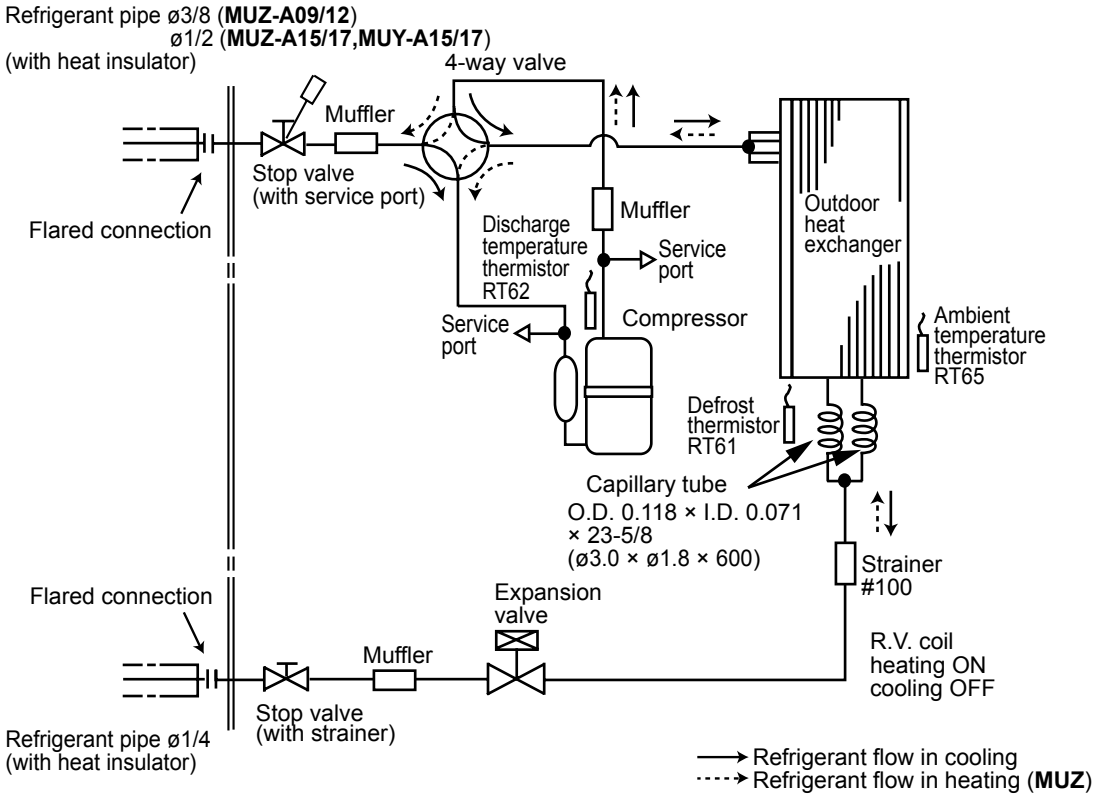
SYMBOL	NAME	SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR	LEV	EXPANSION VALVE
CT1, 2	CURRENT TRANSFORMER	MC	COMPRESSOR
CT61	CURRENT TRANSFORMER	MF	FAN MOTOR
F64	FUSE(T2AL250V)	NF	NOISE FILTER
F65, F66	FUSE(T6.3AL250V)	NR64	VARISTOR
F801	FUSE(T3.15AL250V)	PFC	POWER FACTOR CONTROLLER
HC930	INTELLIGENT POWER MODULE	RS1~4	RESISTOR
IPM	INTELLIGENT POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR
L	REACTOR	RT64	FIN TEMP. THERMISTOR
SYMBOL	NAME	SYMBOL	NAME
RT65	AMBIENT TEMP. THERMISTOR		
RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR		
R64A, B	RESISTOR		
R937A, B	RESISTOR		
TB1	TERMINAL BLOCK		
TB2	TERMINAL BLOCK		
T801	SWITCHING TRANSFORMER		
X64	RELAY		

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
□□□ :Terminal block

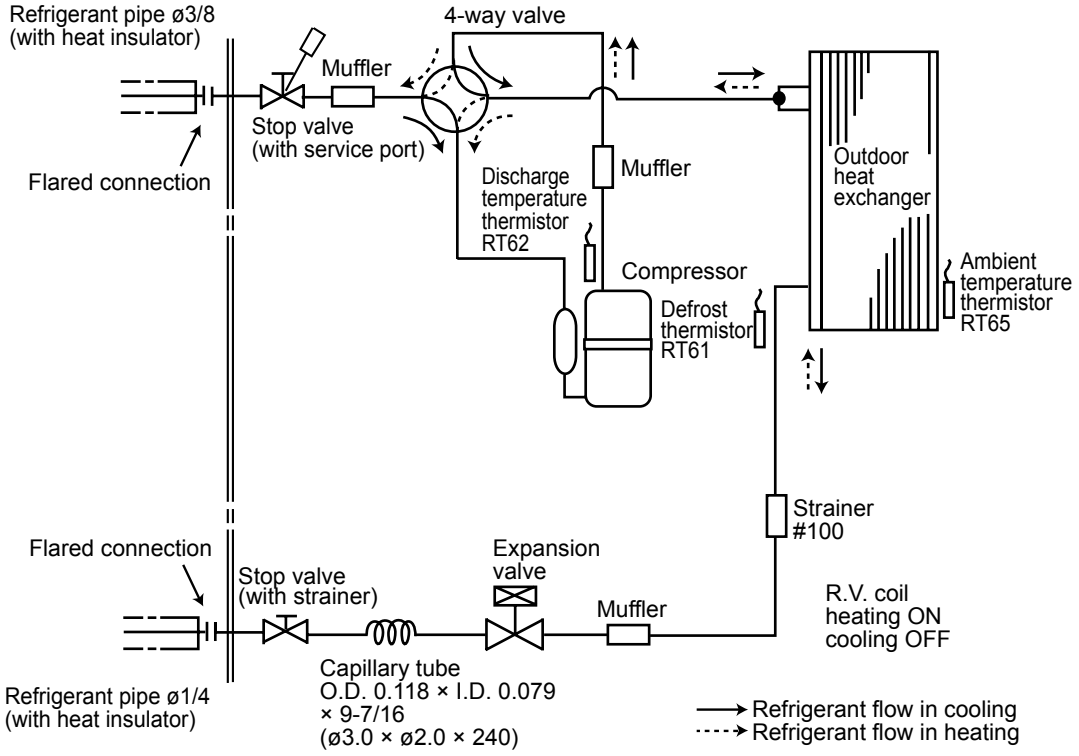
6 REFRIGERANT SYSTEM DIAGRAM

MUZ-A09NA MUZ-A09NA- U1 MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

Unit: inch

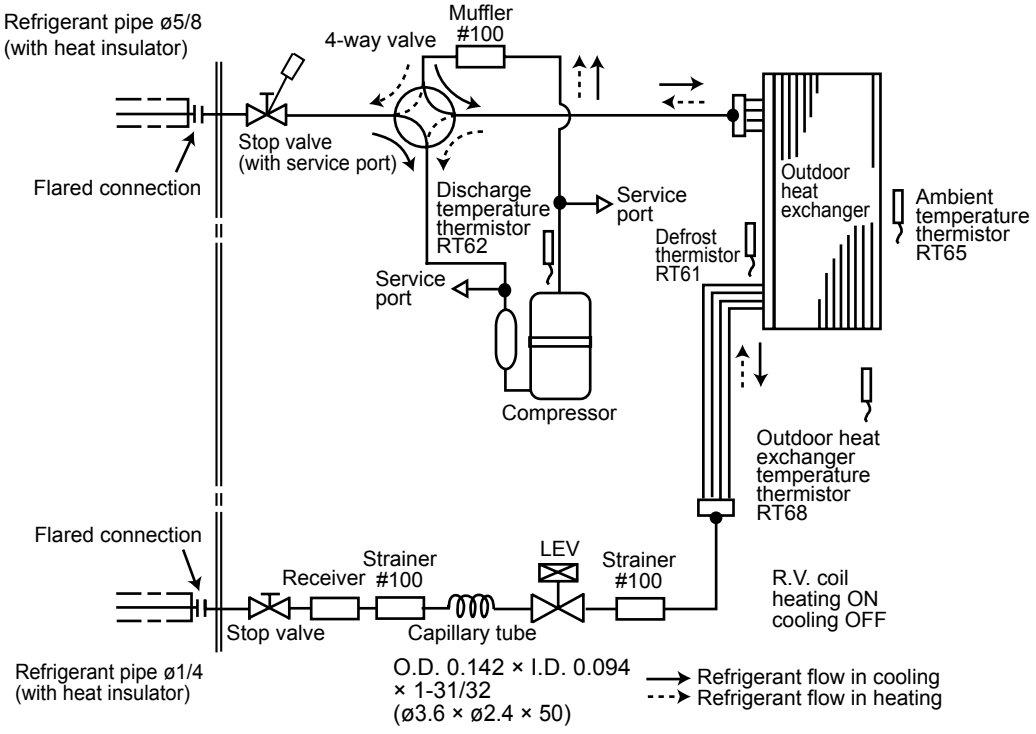


MUZ-A09NA- 1 MUZ-A09NA- U2

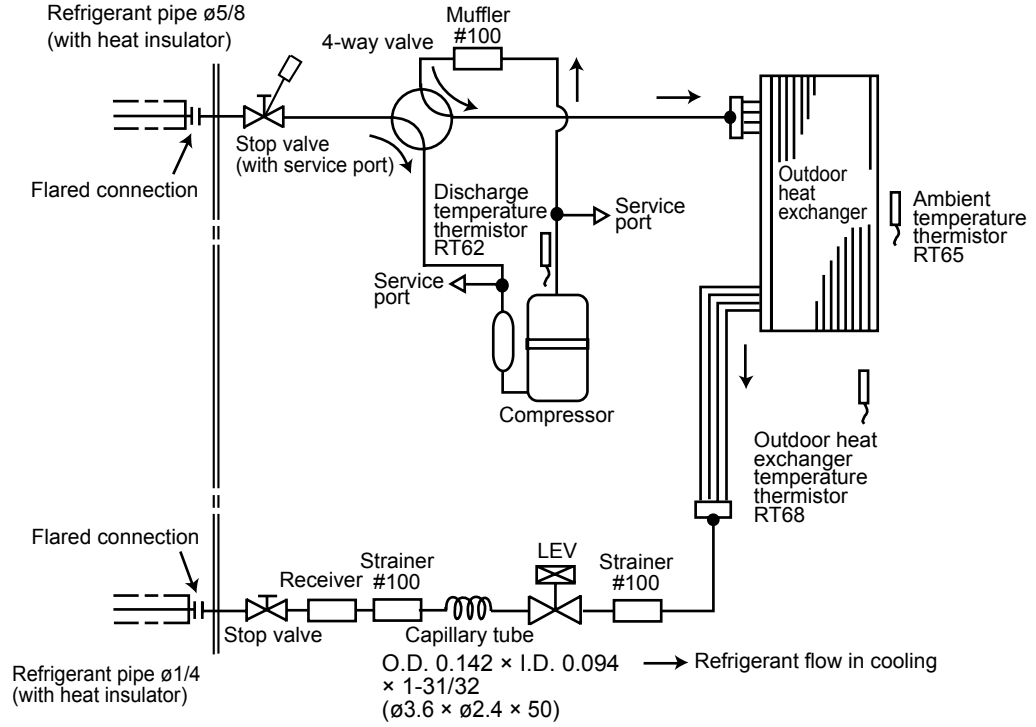


MUZ-A24NA MUZ-GA24NA

Unit: inch

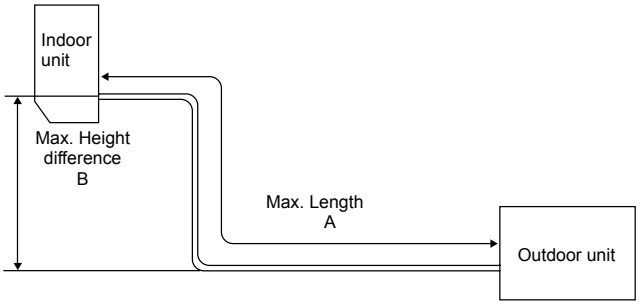


MUY-A24NA MUY-GA24NA



MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

Model	Refrigerant piping: ft.		Piping size O.D: in.	
	Max. Length A	Max. Height difference B	Gas	Liquid
MUZ-A09NA **MUZ-A12NA**	65	40	3/8	1/4
MUZ-A15NA **MUY-A15NA** **MUZ-A17NA** **MUY-A17NA**			1/2	1/4
MUZ-A24NA **MUY-A24NA** **MUZ-GA24NA** **MUY-GA24NA**	100	50	5/8	1/4



ADDITIONAL REFRIGERANT CHARGE (R410A: oz.)

Refrigerant piping exceeding 25 ft. requires additional refrigerant charge according to the calculation.

Model	Outdoor unit precharged	Refrigerant piping length (one way): ft.					
		25	30	40	50	60	65
MUZ-A09NA **MUZ-A09NA - U1** **MUZ-A12NA**	2 lb. 5 oz.	0	1.62	4.86	8.10	11.34	12.96
MUZ-A09NA - 1 **MUZ-A09NA - U2**	2 lb.						
MUZ-A15NA **MUY-A15NA** **MUZ-A17NA** **MUY-A17NA**	2 lb. 7 oz.						

Calculation: X oz. = 1.62/5 oz. / ft. × (Refrigerant piping length (ft.) - 25)

Model	Outdoor unit precharged	Refrigerant piping length (one way): ft.								
		25	30	40	50	60	70	80	90	100
MUZ-A24NA **MUY-A24NA** **MUZ-GA24NA** **MUY-GA24NA**	4 lb.	0	1.08	3.24	5.40	7.56	9.72	11.88	14.04	16.20

Calculation: X oz. = 1.08/5 oz. / ft. × (Refrigerant piping length (ft.) - 25)

NOTE: Refrigerant piping exceeding 25 ft. requires additional refrigerant charge according to the calculation.

7 DATA

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUZ-GA24NA MUY-A15NA MUY-A17NA MUY-A24NA MUY-GA24NA

7-1. PERFORMANCE DATA

1) COOLING CAPACITY

Model	Indoor air	Outdoor intake air DB temperature (˚F)														
	IWB	75			85			95			105			115		
	(˚F)	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
MUZ-A09NA **MUZ-A09NA - U1**	71	11.0	6.4	0.61	10.3	5.9	0.67	9.7	5.6	0.72	9.0	5.2	0.76	8.3	4.8	0.79
	67	10.4	7.4	0.58	9.7	6.9	0.64	9.0	6.4	0.69	8.4	5.9	0.73	7.7	5.5	0.77
	63	9.8	8.3	0.55	9.1	7.7	0.61	8.5	7.1	0.66	7.7	6.5	0.70	7.0	5.9	0.73
MUZ-A09NA - 1 **MUZ-A09NA - U2**	71	11.0	6.4	0.61	10.3	5.9	0.67	9.7	5.6	0.72	9.0	5.2	0.76	8.3	4.8	0.79
	67	10.4	7.4	0.58	9.7	6.9	0.64	9.0	6.4	0.69	8.4	5.9	0.73	7.7	5.5	0.77
	63	9.8	8.3	0.55	9.1	7.7	0.61	8.5	7.1	0.66	7.7	6.5	0.70	7.0	5.9	0.73
MUZ-A12NA	71	14.7	8.5	1.04	13.7	7.9	1.14	12.9	7.4	1.23	12.0	6.9	1.29	11.0	6.4	1.35
	67	13.9	9.9	0.98	13.0	9.2	1.08	12.0	8.5	1.17	11.2	7.9	1.24	10.3	7.3	1.30
	63	13.1	11.0	0.94	12.1	10.2	1.04	11.3	9.5	1.12	10.3	8.7	1.19	9.4	7.9	1.24
MUY-A15NA **MUZ-A15NA**	71	18.4	9.5	1.50	17.2	8.9	1.65	16.1	8.3	1.77	15.0	7.8	1.87	13.8	7.1	1.94
	67	17.4	11.3	1.42	16.2	10.5	1.56	15.0	9.8	1.69	14.0	9.1	1.79	12.8	8.3	1.88
	63	16.4	12.8	1.35	15.2	11.9	1.50	14.1	11.0	1.61	12.8	10.0	1.72	11.7	9.2	1.79
MUY-A17NA **MUZ-A17NA**	71	19.8	10.3	1.84	18.5	9.6	2.02	17.4	9.0	2.17	16.2	8.4	2.29	14.9	7.7	2.38
	67	18.8	12.2	1.74	17.5	11.4	1.91	16.2	10.5	2.07	15.1	9.8	2.19	13.9	9.0	2.30
	63	17.7	13.8	1.66	16.4	12.8	1.83	15.2	11.9	1.98	13.9	10.8	2.11	12.6	9.9	2.19
MUY-A24NA **MUZ-A24NA**	71	27.0	13.4	2.56	25.2	12.5	2.81	23.7	11.7	3.02	22.0	10.9	3.18	20.2	10.1	3.31
	67	25.5	16.1	2.42	23.8	15.0	2.66	22.0	13.9	2.88	20.5	12.9	3.05	18.8	11.9	3.20
	63	24.0	18.3	2.30	22.2	17.0	2.55	20.7	15.8	2.75	18.8	14.4	2.94	17.2	13.1	3.05
MUY-GA24NA **MUZ-GA24NA**	71	27.0	13.4	2.23	25.2	12.5	2.44	23.7	11.7	2.63	22.0	10.9	2.76	20.2	10.1	2.88
	67	25.5	16.1	2.10	23.8	15.0	2.31	22.0	13.9	2.50	20.5	12.9	2.65	18.8	11.9	2.78
	63	24.0	18.3	2.00	22.2	17.0	2.21	20.7	15.8	2.39	18.8	14.4	2.55	17.2	13.1	2.65

NOTE: 1. IWB: Intake air wet-bulb temperature
TC: Total Capacity ($\times 10^3$ Btu/h)
SHC: Sensible Heat Capacity ($\times 10^3$ Btu/h)
TPC: Total Power Consumption (kW)
2. SHC is based on 80˚F of indoor Intake air DB temperature.

2) COOLING CAPACITY CORRECTIONS

Model	Refrigerant piping length (one way: ft.)			
	25 (std.)	40	65	100
MSZ-A09/12/15/17NA **MSY-A15/17NA**	1.0	0.954	0.878	
MSZ-A24NA **MSY-A24NA** **MSZ-GA24NA** **MSY-GA24NA**	1.0	0.95	0.878	0.713

3) HEATING CAPACITY

Model	Indoor air	Outdoor intake air WB temperature (˚F)													
	IDB	5		15		25		35		43		45		55	
	(˚F)	TC	TPC	TC	TPC	TC	TPC	TC	TPC	TC	TPC	TC	TPC	TC	TPC
MUZ-A09NA **MUZ-A09NA - U1**	75	—	—	6.3	0.64	7.9	0.75	9.4	0.84	10.6	0.88	11.0	0.89	12.4	0.93
	70			6.7	0.62	8.2	0.74	9.6	0.82	10.9	0.86	11.2	0.88	12.7	0.91
	65			6.9	0.59	8.6	0.71	10.0	0.80	11.2	0.84	11.6	0.85	13.0	0.89
MUZ-A09NA - 1 **MUZ-A09NA - U2**	75	—	—	6.3	0.64	7.9	0.75	9.4	0.84	10.6	0.88	11.0	0.89	12.4	0.93
	70			6.7	0.62	8.2	0.74	9.6	0.82	10.9	0.86	11.2	0.88	12.7	0.91
	65			6.9	0.59	8.6	0.71	10.0	0.80	11.2	0.84	11.6	0.85	13.0	0.89
MUZ-A12NA	75	—	—	7.9	0.86	9.9	1.02	11.8	1.13	13.3	1.19	13.7	1.21	15.5	1.25
	70			8.4	0.84	10.2	0.99	12.0	1.10	13.6	1.16	14.0	1.18	15.8	1.23
	65			8.6	0.80	10.7	0.96	12.4	1.07	14.0	1.13	14.4	1.15	16.2	1.21
MUZ-A15NA	75	—	—	10.4	1.33	13.1	1.57	15.6	1.75	17.6	1.83	18.1	1.86	20.5	1.93
	70			11.1	1.29	13.5	1.53	15.9	1.70	18.0	1.79	18.5	1.83	21.0	1.90
	65			11.3	1.24	14.1	1.48	16.5	1.66	18.5	1.75	19.1	1.77	21.4	1.86
MUZ-A17NA	75	—	—	11.7	1.60	14.6	1.88	17.4	2.10	19.6	2.20	20.2	2.24	22.9	2.32
	70			12.4	1.55	15.1	1.84	17.8	2.04	20.1	2.15	20.7	2.19	23.4	2.28
	65			12.7	1.48	15.8	1.77	18.4	1.99	20.7	2.10	21.3	2.13	23.9	2.24
MUZ-A24NA	75	—	—	13.5	1.75	16.8	2.06	20.1	2.29	22.6	2.41	23.3	2.44	26.4	2.54
	70			14.3	1.69	17.4	2.01	20.5	2.23	23.2	2.35	23.9	2.40	27.0	2.49
	65			14.6	1.62	18.2	1.94	21.2	2.17	23.9	2.29	24.6	2.33	27.6	2.44
MUZ-GA24NA	75	10.2	1.26	13.5	1.59	16.8	1.87	20.1	2.09	22.6	2.19	23.3	2.23	26.4	2.31
	70	11.0	1.21	14.3	1.54	17.4	1.83	20.5	2.03	23.2	2.14	23.9	2.18	27.0	2.27
	65	11.6	1.16	14.6	1.48	18.2	1.77	21.2	1.98	23.9	2.09	24.6	2.12	27.6	2.23

NOTE: 1. IDB: Intake air dry-bulb temperature
TC: Total Capacity ($\times 10^3$ Btu/h)
TPC: Total Power Consumption (kW)
2. Above data is for heating operation without any frost.

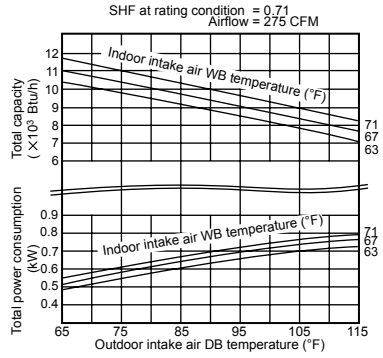
How to operate with fixed operational frequency of the compressor.

1. Press the EMERGENCY OPERATION switch on the front of the indoor unit, and select either EMERGENCY COOL mode or EMERGENCY HEAT mode before starting to operate the air conditioner.
2. The compressor starts with operational frequency.
3. The fan speed of the indoor unit is High.
4. This operation continues for 30 minutes.
5. In order to release this operation, press the EMERGENCY OPERATION switch twice or once, or press any button on the remote controller.

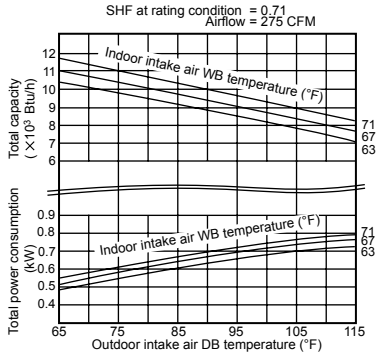
7-2. PERFORMANCE CURVE

Cooling

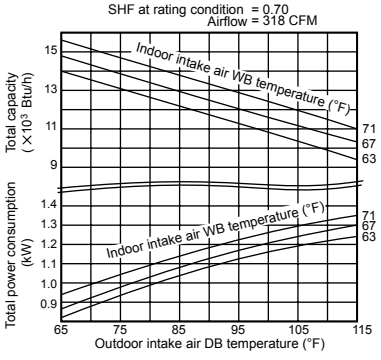
MUZ-A09NA
MUZ-A09NA- U1



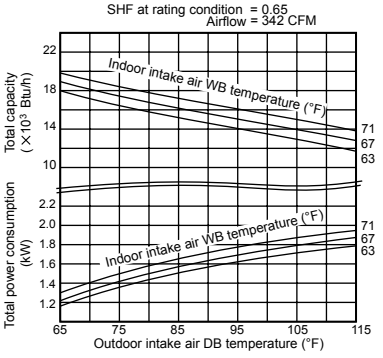
MUZ-A09NA- 1
MUZ-A09NA- U2



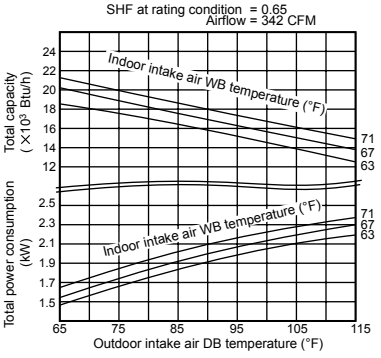
MUZ-A12NA



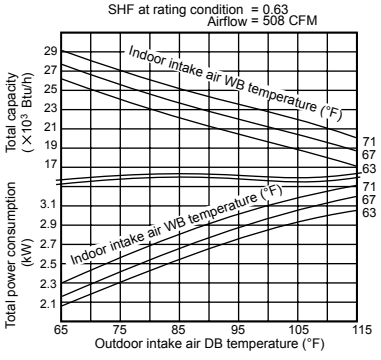
MUZ-A15NA MUY-A15NA



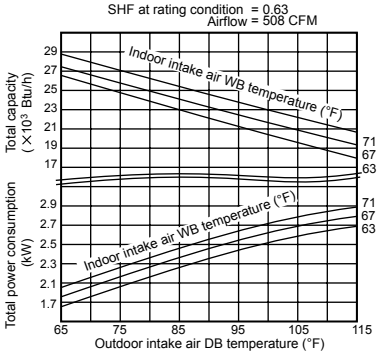
MUZ-A17NA MUY-A17NA



MUZ-A24NA MUY-A24NA

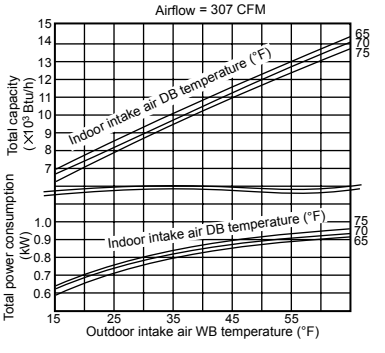


MUZ-GA24NA MUY-GA24NA

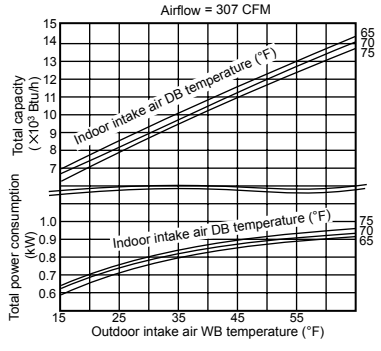


Heating

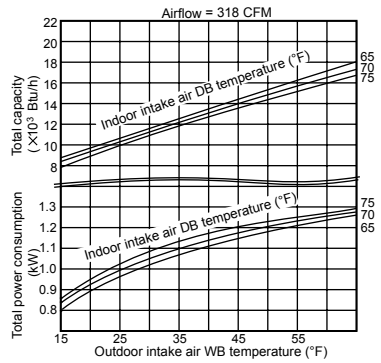
MUZ-A09NA
MUZ-A09NA- U1



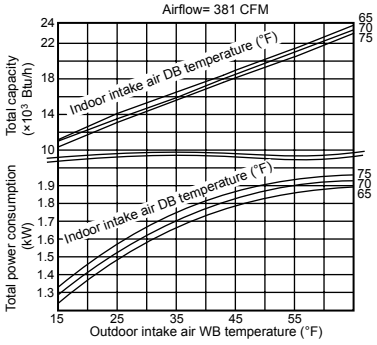
MUZ-A09NA- 1
MUZ-A09NA- U2



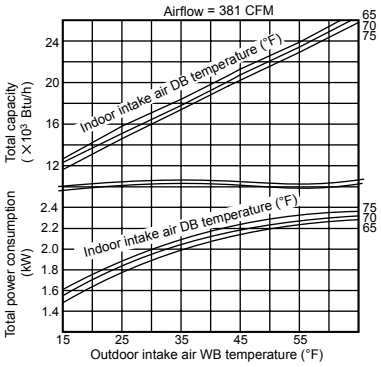
MUZ-A12NA



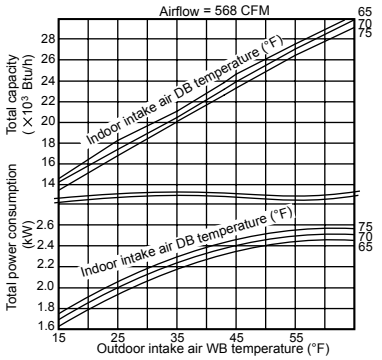
MUZ-A15NA



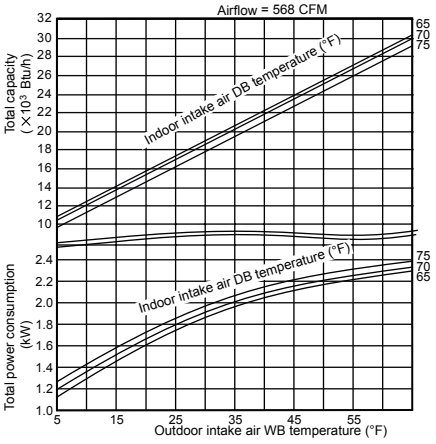
MUZ-A17NA



MUZ-A24NA



MUZ-GA24NA



This value of frequency is not the same as the actual frequency in operating. Refer to 7-5 and 7-6 for the relationships between frequency and capacity.

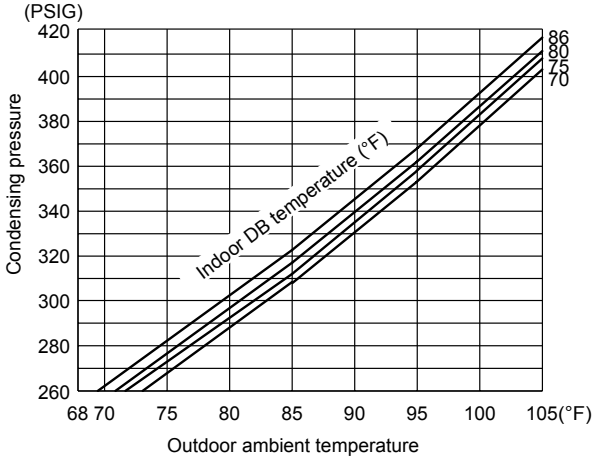
7-3. Condensing pressure

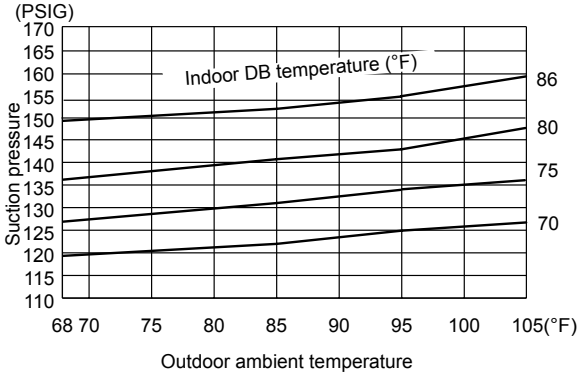
Cooling

Data is based on the condition of indoor humidity 50%.
Air flow should be set to High speed.

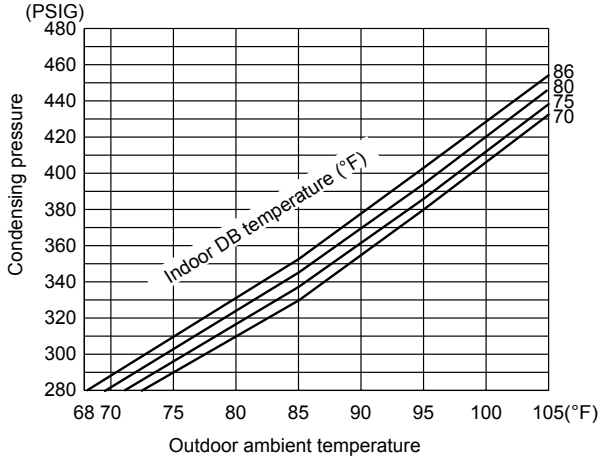
MUZ-A09NA

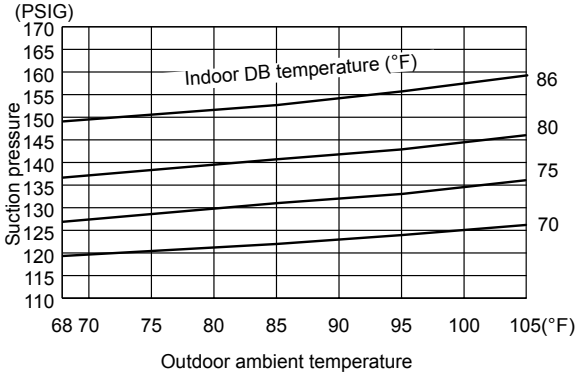
MUZ-A09NA- U1



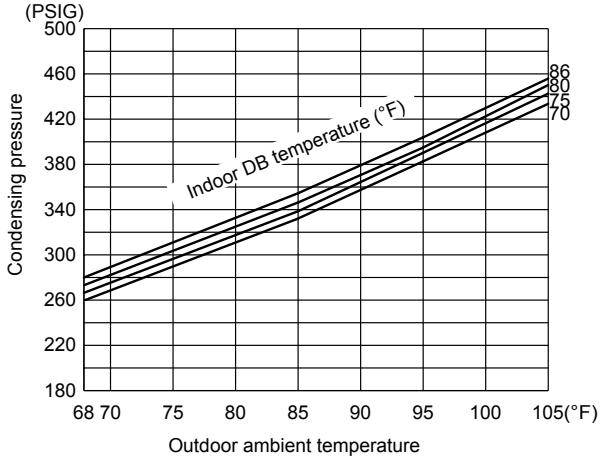


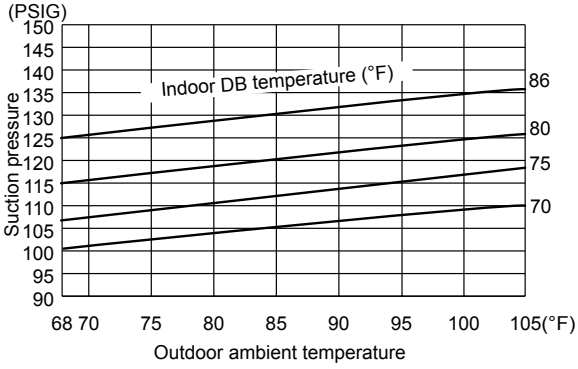
MUZ-A09NA- 1
MUZ-A09NA- U2



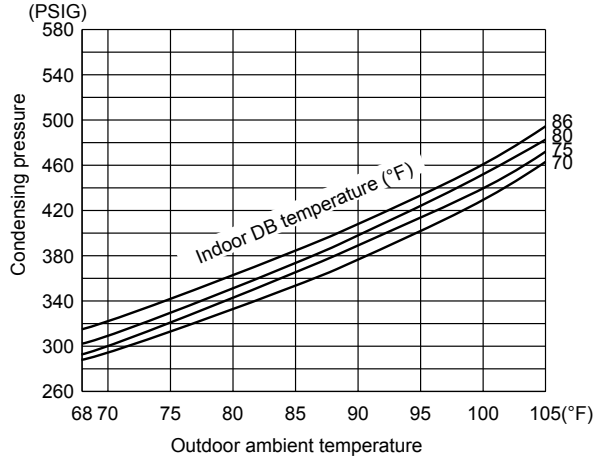


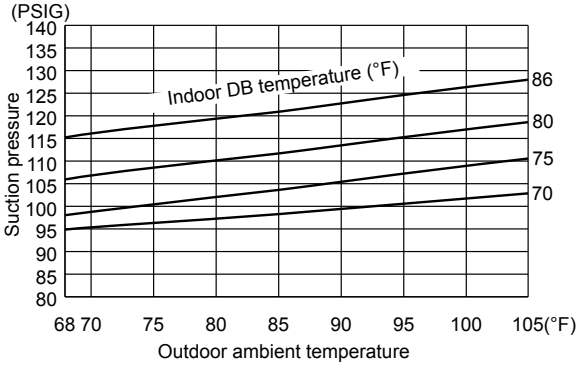
MUZ-A12NA



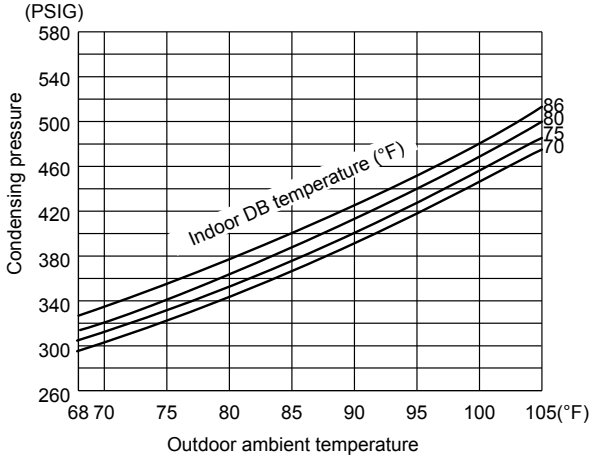


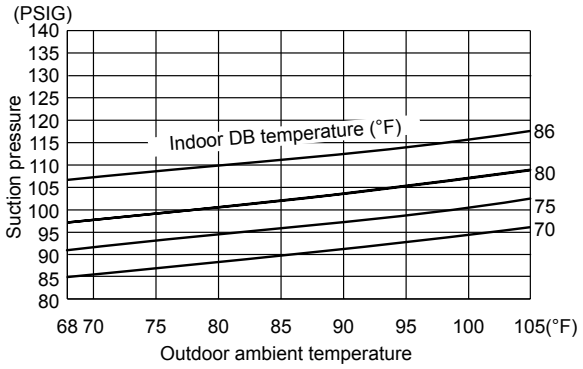
MUZ-A15NA
MUY-A15NA



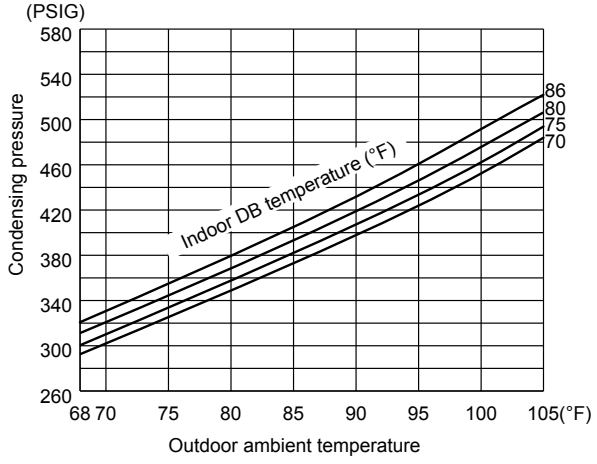


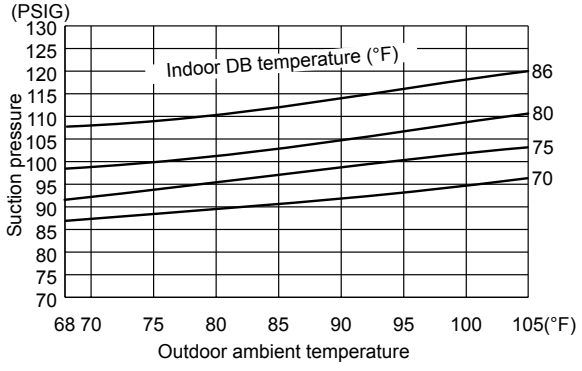
MUZ-A17NA
MUY-A17NA



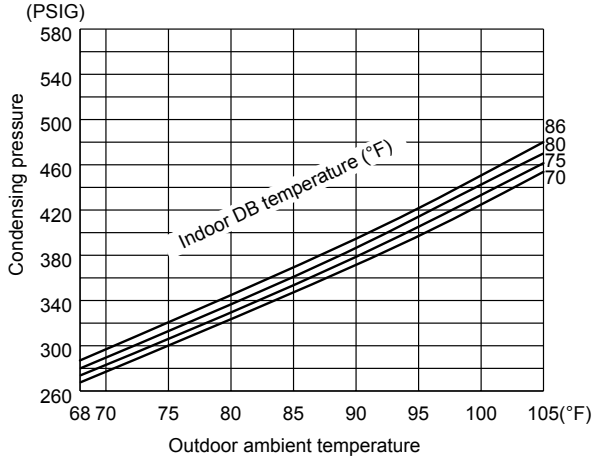


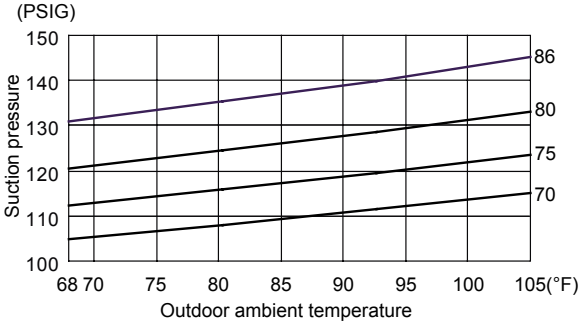
MUZ-A24NA
MUY-A24NA





MUZ-GA24NA
MUY-GA24NA



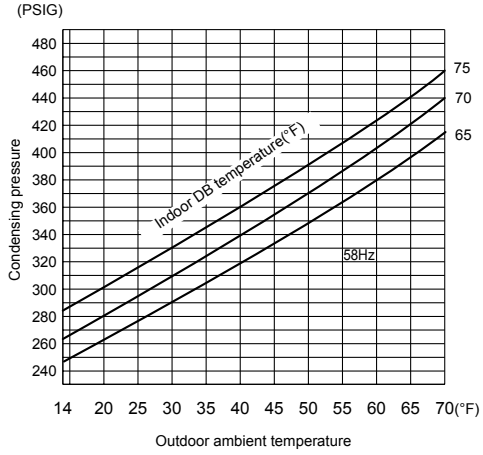


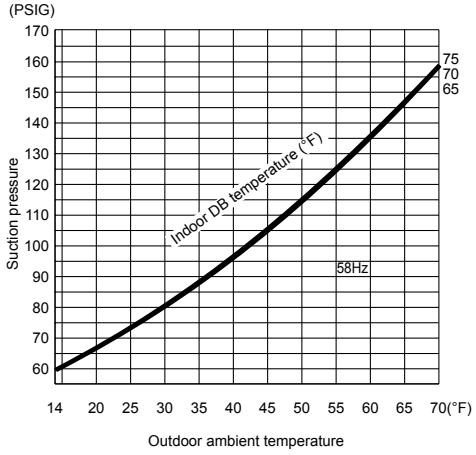
Heating

Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

MUZ-A09NA

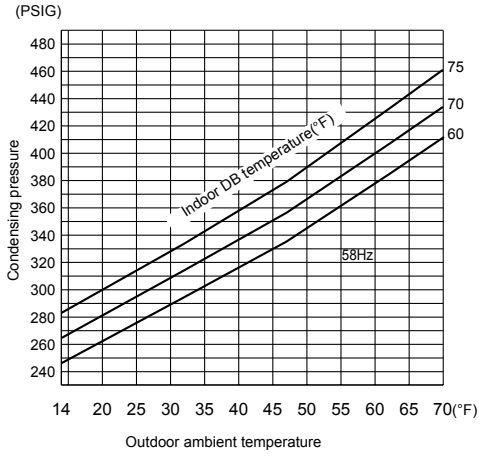
MUZ-A09NA- U1

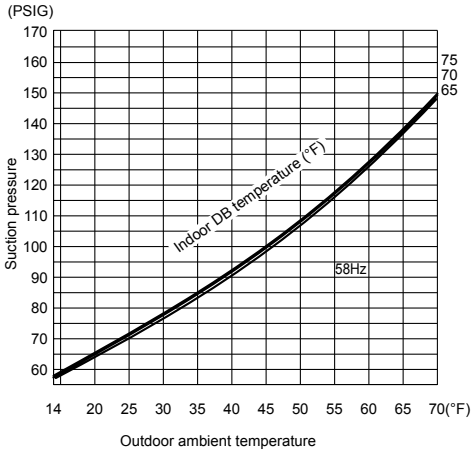




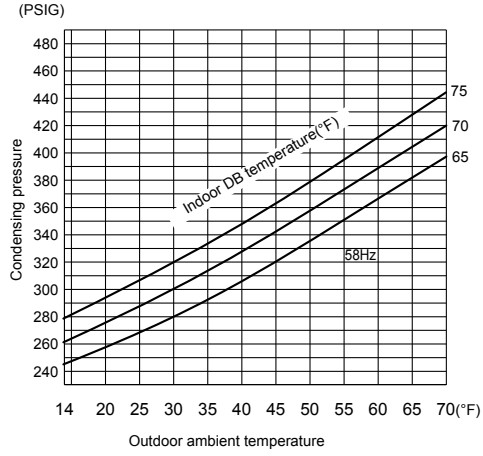
MUZ-A09NA- 1

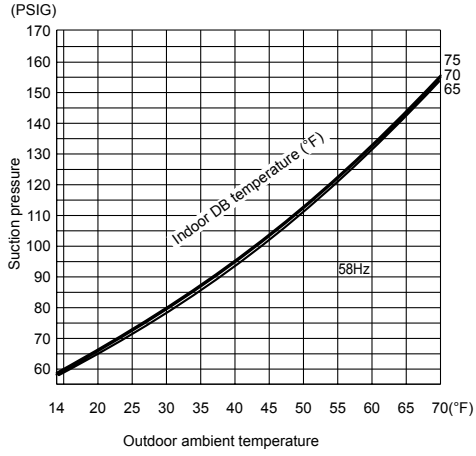
MUZ-A09NA- U2



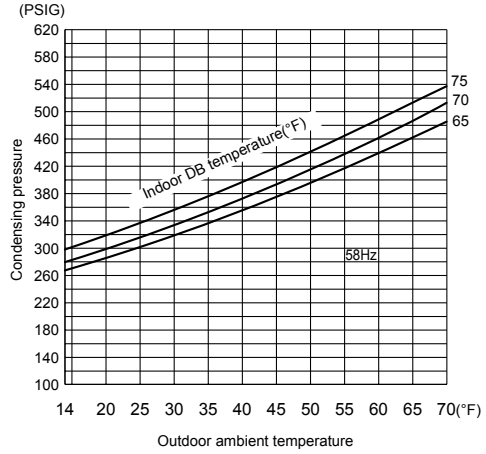


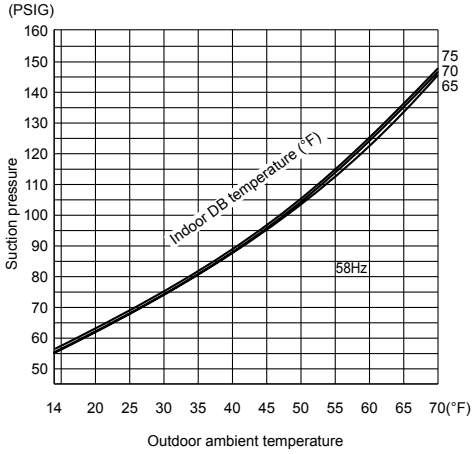
MUZ-A12NA



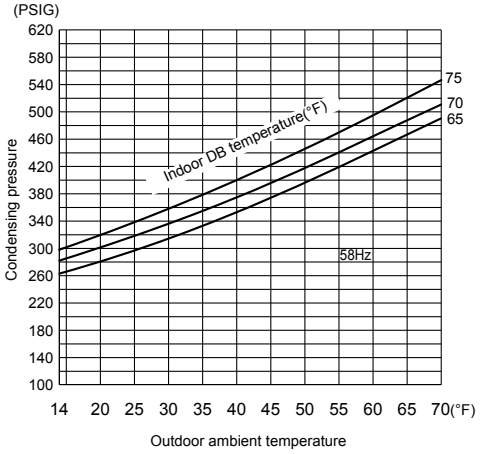


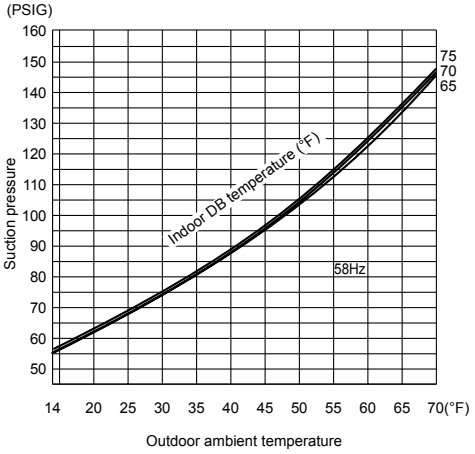
MUZ-A15NA



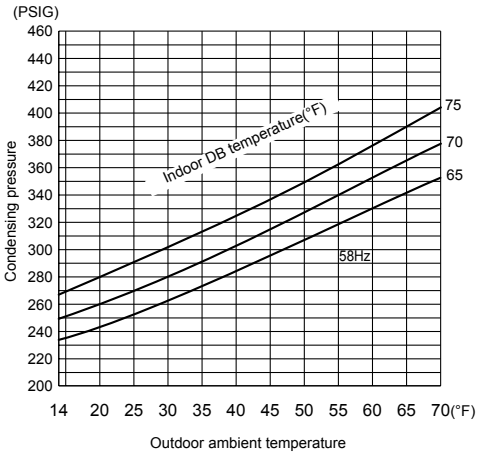


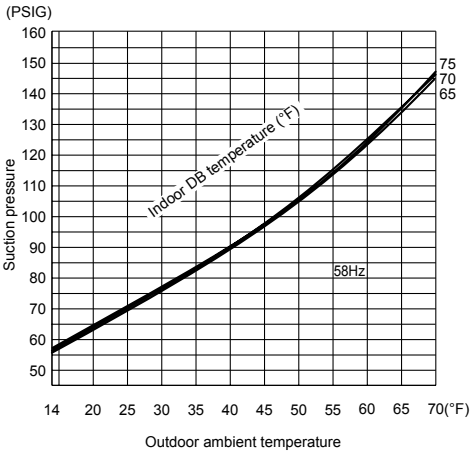
MUZ-A17NA



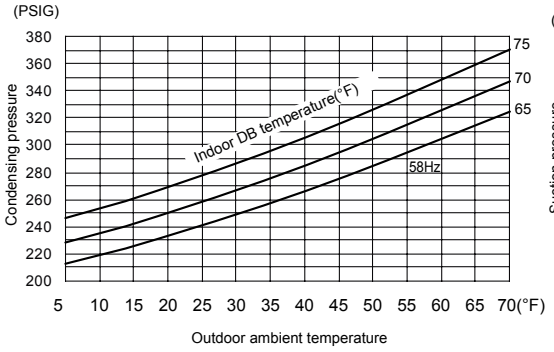


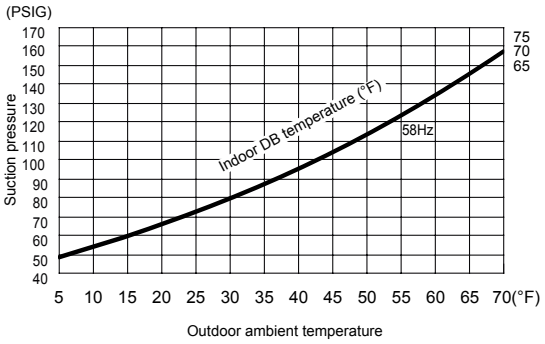
MUZ-A24NA





MUZ-GA24NA


(PSIG)
380
360
340
320
300
280
260
240
220
200
Condensing pressure
Indoor DB temperature(°F)
75
70
65
58Hz
5 10 15 20 25 30 35 40 45 50 55 60 65 70(°F)
Outdoor ambient temperature


(PSIG)
170
160
150
140
130
120
110
100
90
80
70
60
50
40
Suction pressure
Indoor DB temperature (°F)
75
70
65
58Hz
5 10 15 20 25 30 35 40 45 50 55 60 65 70(°F)
Outdoor ambient temperature

7-4. STANDARD OPERATION DATA

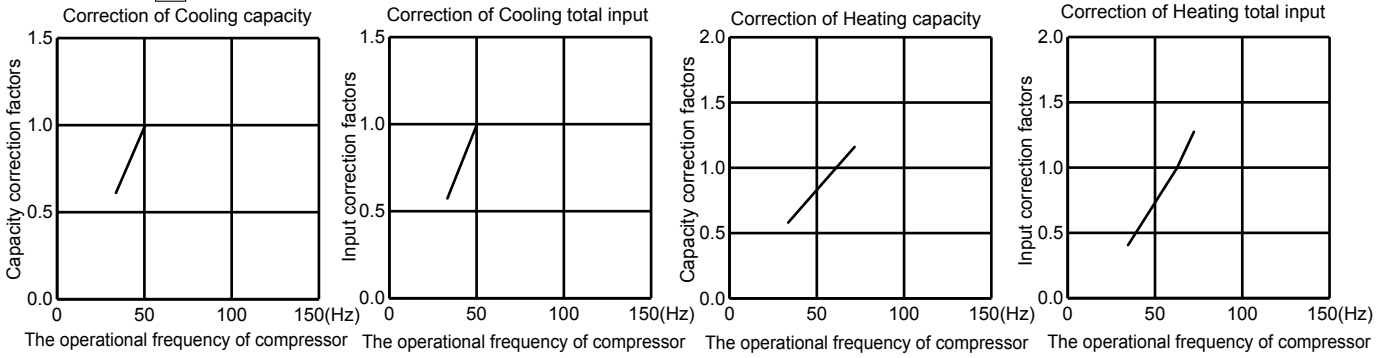
Model				MUZ-A09NA				MSZ-A12NA	
Item			Unit	Cooling	Heating	Cooling	Heating	Cooling	Heating
Total	Capacity		Btu/h	9,000	10,900	9,000	10,900	12,000	13,600
	SHF		—	0.71	—	0.71	—	0.70	—
	Input		kW	0.690	0.860	0.690	0.860	1,170	1,160
	Rated frequency		Hz	50	61	50	63	76	76
Electrical circuit	Indoor unit			MSZ-A09NA				MSZ-A12NA	
	Power supply (V, Phase, Hz)			208 / 230, 1, 60				208 / 230, 1, 60	
	Input		kW	0.016				0.021	
	Fan motor current		A	0.18 / 0.16				0.23 / 0.21	
	Outdoor unit			MUZ-A09NA MUZ-A09NA-U1		MUZ-A09NA-1 MUZ-A09NA-U2		MUZ-A12NA	
	Power supply (V, phase, Hz)			208 / 230, 1, 60				208 / 230, 1, 60	
	Input		kW	0.674	0.844	0.674	0.844	1.149	1.139
	Comp. current		A	2.80 / 2.53	3.63 / 3.28	3.14 / 2.84	3.89 / 3.52	5.08 / 4.59	5.03 / 4.54
	Fan motor current		A	0.37 / 0.34		0.33 / 0.30		0.37 / 0.34	
Refrigerant circuit	Condensing pressure		PSIG	363	368	393	372	395	393
	Suction pressure		PSIG	144	109	144	102	124	103
	Discharge temperature		°F	145	153	155	165	169	164
	Condensing temperature		°F	107	108	113	109	112	113
	Suction temperature		°F	55	37	56	38	54	35
	Comp. shell bottom temp		°F	140	147	149	159	163	158
	Ref. pipe length		ft.	25				25	
	Refrigerant charge (R410A)		—	2 lb. 5 oz.		2 lb.		2 lb. 5 oz.	
Indoor unit	Intake air temperature	DB	°F	80	70	80	70	80	70
		WB	°F	67	60	67	60	67	60
	Discharge air temperature	DB	°F	57	105	57	105	56	108
		WB	°F	56	71	56	71	54	72
	Fan speed (High)		rpm	1,080	1,080	1,080	1,080	1,220	1,220
	Airflow (High)		CFM	275 (Wet)	307	275 (Wet)	307	318 (Wet)	353
Outdoor unit	Intake air temperature	DB	°F	95	47	95	47	95	47
		WB	°F	—	43	—	43	—	43
	Fan speed		rpm	840	840	840	840	840	840
	Airflow		CFM	1,094	1,094	1,129	1,129	1,094	1,094

Model				MSZ-A15NA MSY-A15NA	MSZ-A15NA	MSZ-A17NA MSY-A17NA	MSZ-A17NA
Item			Unit	Cooling	Heating	Cooling	Heating
Total	Capacity		Btu/h	15,000	18,000	16,200	20,100
	SHF		-	0.65	—	0.65	—
	Input		kW	1.69	1.79	2.07	2.15
	Rated frequency		Hz	77	78	89	88
Electrical circuit	Indoor unit			**MSZ-A15NA, MSY-A15NA**		**MSZ-A17NA, MSY-A17NA**	
	Power supply (V, Phase, Hz)			208 / 230, 1, 60		208 / 230, 1, 60	
	Input		kW	0.030		0.030	
	Fan motor current		A	0.31 / 0.28		0.31 / 0.28	
	Outdoor unit			**MUZ-A15NA MUY-A15NA**	**MUZ-A15NA**	**MUZ-A17NA MUY-A17NA**	**MUZ-A17NA**
	Power supply (V, phase, Hz)			208 / 230, 1, 60		208 / 230, 1, 60	
	Input		kW	1.660	1.760	2.040	2.120
	Comp. current		A	7.56 / 6.84	8.14 / 7.36	9.43 / 8.52	9.93 / 8.98
	Fan motor current		A	0.42 / 0.38		0.42 / 0.38	
Refrigerant circuit	Condensing pressure		PSIG	425	458	442	493
	Suction pressure		PSIG	115	95	106	92
	Discharge temperature		°F	182	180	189	194
	Condensing temperature		°F	117	125	120	130
	Suction temperature		°F	47	30	40	28
	Comp. shell bottom temp		°F	161	153	167	167
	Ref. pipe length		ft.	25		25	
	Refrigerant charge (R410A)		-	2 lb. 7 oz.		2 lb. 7 oz.	
Indoor unit	Intake air temperature	DB	°F	80	70	80	70
		WB	°F	67	60	67	60
	Discharge air temperature	DB	°F	53	116	52	120
		WB	°F	52	74	51	75
	Fan speed (High)		rpm	1,300	1,300	1,300	1,300
	Airflow (High)		CFM	342 (Wet)	381	342 (Wet)	381
Outdoor unit	Intake air temperature	DB	°F	95	47	95	47
		WB	°F	—	43	—	43
	Fan speed		rpm	950	950	950	950
	Airflow		CFM	1,249	1,249	1,249	1,249

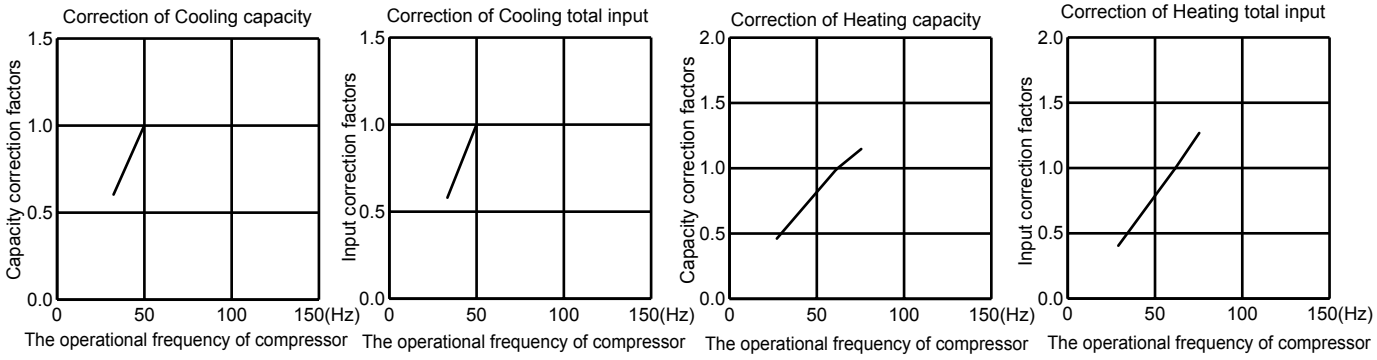
Model				MSZ-A24NA MSY-A24NA	MSZ-A24NA	MSZ-GA24NA MSY-GA24NA	MSZ-GA24NA
Item			Unit	Cooling	Heating	Cooling	Heating
Total	Capacity		Btu/h	22,000	23,200	22,000	23,200
	SHF		-	0.63	—	0.63	—
	Input		kW	2.88	2.35	2.50	2.14
	Rated frequency		Hz	110	101	101	96
Electrical circuit	Indoor unit			**MSZ-A24NA, MSY-A24NA**		**MSZ-GA24NA, MSY-GA24NA**	
	Power supply (V, Phase, Hz)			208 / 230, 1, 60			
	Input		kW	0.053			
	Fan motor current		A	0.52 / 0.47			
	Outdoor unit			**MUZ-A24NA MUY-A24NA**	**MUZ-A24NA**	**MUZ-GA24NA MUY-GA24NA**	**MUZ-GA24NA**
	Power supply (V, phase, Hz)			208 / 230, 1, 60			
	Input		kW	2.827	2.297	2.447	2.087
	Comp. current		A	12.81 / 11.59	11.10 / 10.04	10.82 / 9.78	9.32 / 8.43
	Fan motor current		A	0.80 / 0.72		0.80 / 0.72	0.64 / 0.59
Refrigerant circuit	Condensing pressure		PSIG	447	401	413	375
	Suction pressure		PSIG	107	92	130	103
	Discharge temperature		°F	181	170	168	173
	Condensing temperature		°F	121	115	119	112
	Suction temperature		°F	37	29	43	31
	Comp. shell bottom temp		°F	161	148	160	164
	Ref. pipe length		ft.	25			
	Refrigerant charge (R410A)		-	4 lb.			
Indoor unit	Intake air temperature	DB	°F	80	70	80	70
		WB	°F	67	60	67	60
	Discharge air temperature	DB	°F	56	108	56	108
		WB	°F	55	72	55	72
	Fan speed (High)		rpm	1,310			
	Airflow (High)		CFM	385 (Wet)	341	385 (Wet)	341
Outdoor unit	Intake air temperature	DB	°F	95	47	95	47
		WB	°F	—	43	—	43
	Fan speed		rpm	800			740
	Airflow		CFM	1,729			1,660

7-5. CAPACITY AND INPUT CORRECTION BY INVERTER OUTPUT FREQUENCY

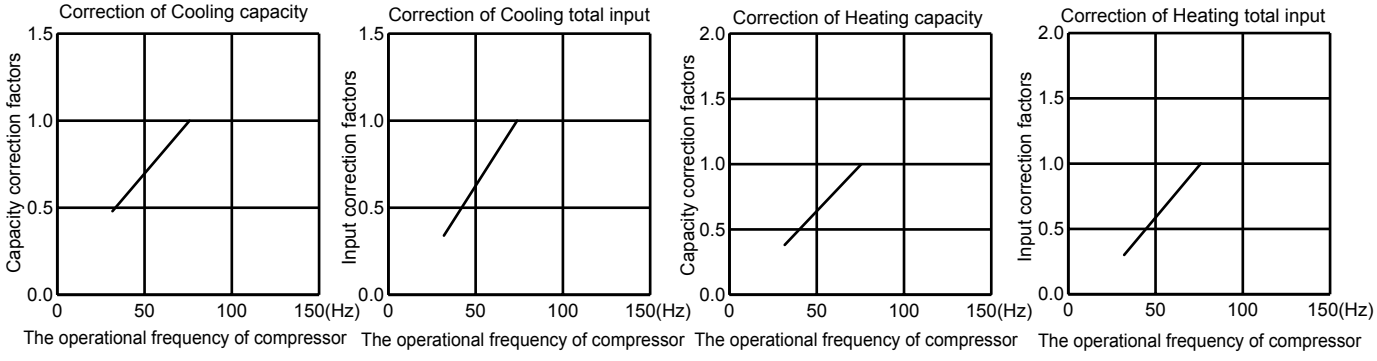
MUZ-A09NA
MUZ-A09NA - U1



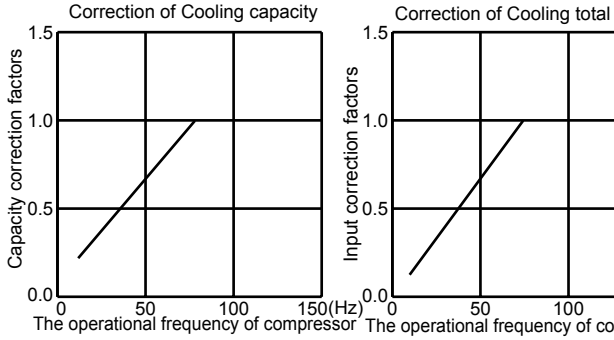
MUZ-A09NA - 1
MUZ-A09NA - U2



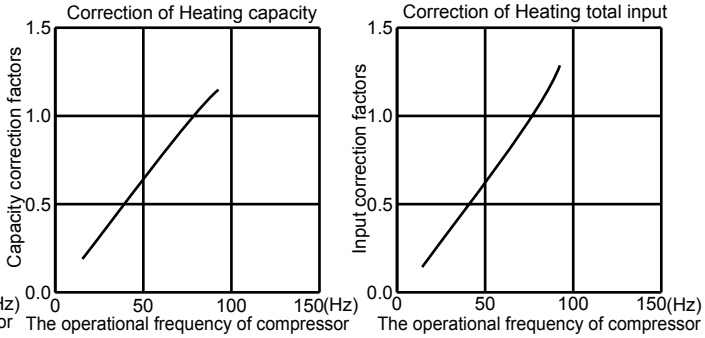
MUZ-A12NA



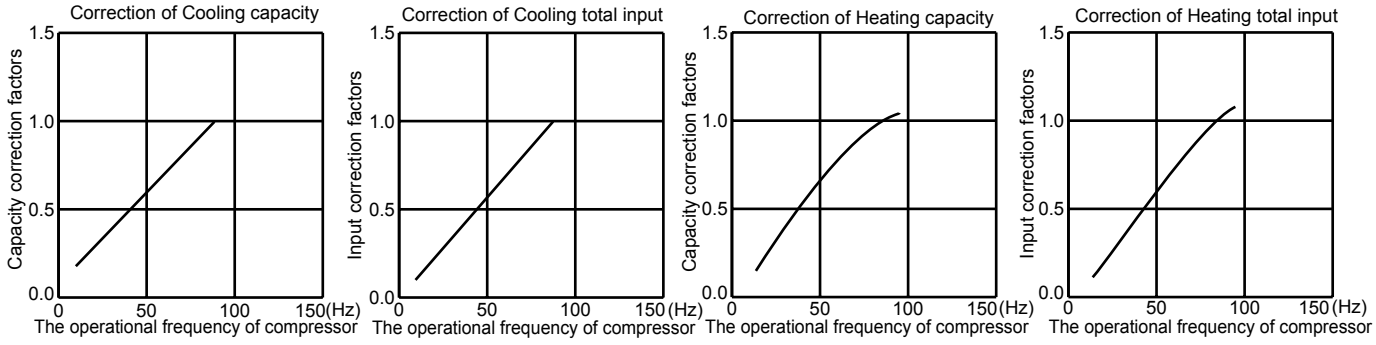
MUZ-A15NA
MUY-A15NA



MUZ-A15NA

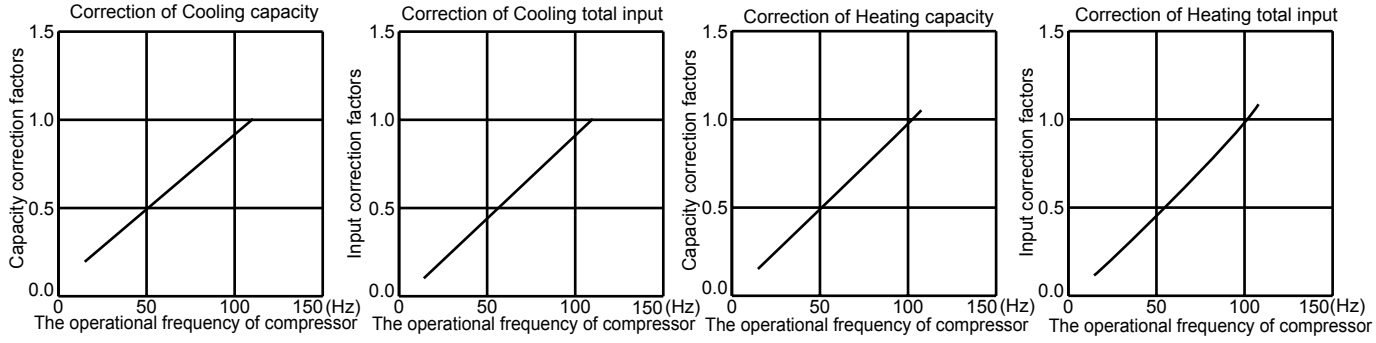


MUZ-A17NA
MUY-A17NA



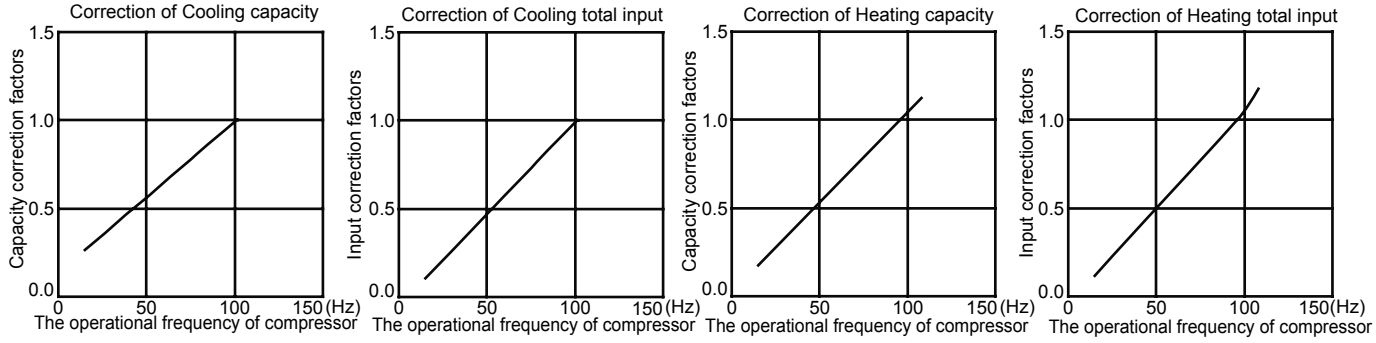
MUZ-A17NA

MUZ-A24NA
MUY-A24NA



MUZ-A24NA

MUZ-GA24NA
MUY-GA24NA



MUZ-GA24NA

7-6. TEST RUN OPERATION (How to operate fixed-frequency operation)

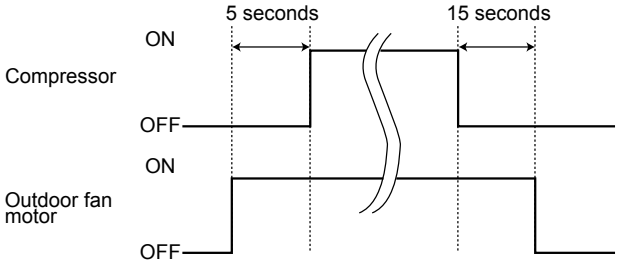
1. Press EMERGENCY OPERATION switch to COOL or HEAT mode (COOL: Press once, HEAT: Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 58 Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts (operation frequency of compressor varies).
6. To cancel test run operation (EMERGENCY OPERATION), press EMERGENCY OPERATION switch or any button on remote controller.

8 ACTUATOR CONTROL

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUY-A15NA MUY-A17NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

8-1. OUTDOOR FAN MOTOR CONTROL

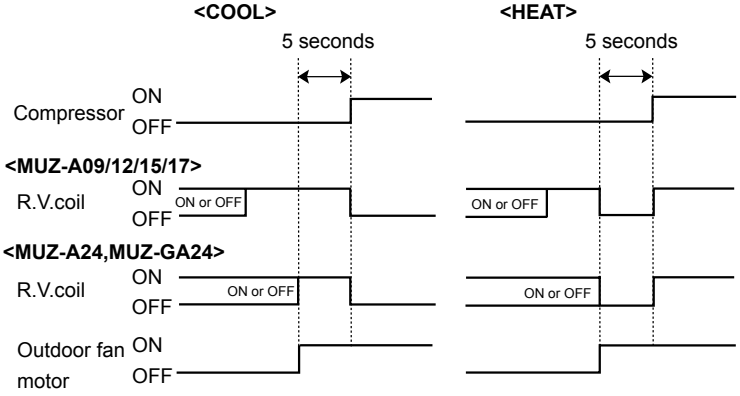
The fan motor turns ON/OFF, interlocking with the compressor.
[ON] The fan motor turns ON 5 seconds before the compressor starts up.
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



8-2. R.V. COIL CONTROL(MUZ)

Heating · · · · · · · · · · · · · · · · · · ON
Cooling · · · · · · · · · · · · · · · · · · OFF
Dry · OFF

NOTE: The 4-way valve reverses for 5 seconds right before start-up of the compressor.



8-3. RELATION BETWEEN MAIN SENSOR AND ACTUATOR

<MUZ-A09/12/15/17, MUY-A15/17>

Sensor	Purpose	Actuator				
		Compressor	LEV	Outdoor fan motor	R.V. coil	Indoor fan motor
Discharge temperature thermistor	Protection	○	○			
Indoor coil temperature thermistor	Cooling: Coil frost prevention	○				
	Heating: High pressure protection	○	○			
Defrost thermistor	Cooling: High pressure protection	○	○			
	Heating: Defrosting	○	○	○	○	○
Fin temperature thermistor	Protection	○		○		
Ambient temperature thermistor	Cooling: Low ambient temperature operation	○	○	○		

<MUZ-A24, MUY-A24, MUZ-GA24, MUY-GA24>

Sensor	Purpose	Actuator				
		Compressor	LEV	Outdoor fan motor	R.V. coil	Indoor fan motor
Discharge temperature thermistor	Protection	○	○			
Indoor coil temperature thermistor	Cooling: Coil frost prevention	○				
	Heating: High pressure protection	○	○			
Defrost thermistor (**MUZ**)	Defrosting	○	○	○	○	○
Fin temperature thermistor	Protection	○		○		
Outdoor heat exchanger temperature	High pressure protection	○	○	○		
Ambient temperature thermistor	Cooling: Low ambient temperature operation	○	○	○		

9 SERVICE FUNCTIONS

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA

CHANGE IN DEFROST SETTING

<JS> When the JS wire of the outdoor Inverter P.C. board is cut/soldered, the defrost finish temperature is changed. (Refer to 10-6.1.)

Jumper wire		Defrost finish temperature °F (°C)	
		MUZ-A09/12NA	MUZ-A15/17NA
JS	Soldered (Initial setting)	50 (10)	41 (5)
	None (Cut)	55 (13)	46 (8)

10 TROUBLESHOOTING

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUY-A15NA MUY-A17NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

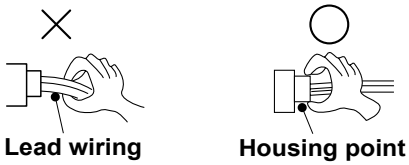
10-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following

1) Check the power supply voltage.
2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care of the following during servicing

1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, then after confirming the horizontal vane is closed, turn OFF the breaker and/or disconnect the power plug.
2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
3) When removing the electrical parts, be careful of the residual voltage of smoothing capacitor.
4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
5) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



3. Troubleshooting procedure

1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing ON and OFF to indicate an abnormality. To make sure, check how many times the abnormality indication is flashing ON and OFF before starting service work.
2) Before servicing check that the connector and terminal are connected properly.
3) When the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) Refer to 10-2. and 10-3.

10-2. FAILURE MODE RECALL FUNCTION

Outline of the function

This air conditioner can memorize the abnormal condition which has occurred once.

Even though LED indication listed on the troubleshooting check table (10-3.) disappears, the memorized failure details can be recalled.

1. Flow chart of failure mode recall function for the indoor/outdoor unit

Operational procedure

The cause of abnormality cannot be found because the abnormality does not recur.

Setting up the failure mode recall function

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons after all LCD in operation display section of the remote controller is displayed after 3 seconds.

Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: Either indoor or outdoor unit is abnormal. Beep is emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF)

Indoor unit is normal.
But the outdoor unit might be abnormal because there are some abnormalities that can not be recalled with this way.
Confirm if outdoor unit is abnormal according to the detailed outdoor unit failure mode recall function. (Refer to 10-2.2)

Yes (Blinks)

Judgment of indoor/outdoor abnormality

Before blinking, does the left lamp of OPERATION INDICATOR lamp stay ON for 3 seconds?
Stays ON for 3 seconds (without beep):
The outdoor unit is abnormal.

Yes

No

The indoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the indoor unit failure mode table. (Refer to indoor unit service manual.)
Make sure to check at least two consecutive blinking cycles. ※2

The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table. (Refer to 10-2.3)
Make sure to check at least two consecutive blinking cycles. ※3

Releasing the failure mode recall function

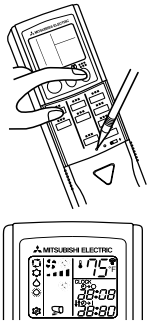
Release the failure mode recall function by the following procedures.
Turn OFF the power supply and turn it ON again.
Press RESET button of the remote controller.

Repair the defective parts.

Deleting the memorized abnormal condition

① After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
② Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③ Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④ Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

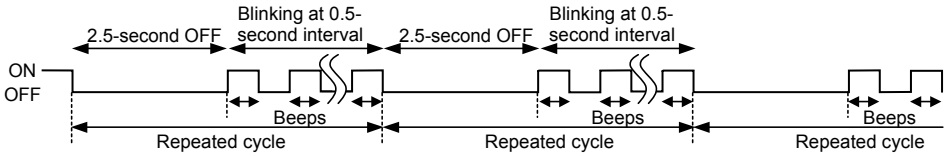
This figures show about MSZ-A09/12/15/17.



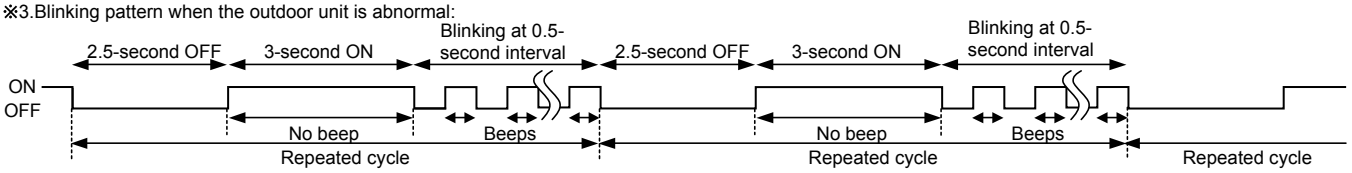
※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

NOTE: 1. Make sure to release the failure mode recall function once it's set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2. Blinking pattern when the indoor unit is abnormal:



※3.Blinking pattern when the outdoor unit is abnormal:



2. Flow chart of the detailed outdoor unit failure mode recall function

Operational procedure

The outdoor unit might be abnormal.
Confirm if outdoor unit is abnormal according to the following procedures.

↓

Confirm that the remote controller is in the failure mode recall function.

↓

With the remote controller headed towards the indoor unit, press TOO COOL or TOO WARM button to adjust the set temperature to 77˚F (25˚C). ※1

※1. Regardless of normal or abnormal condition, 2 short beeps are emitted as the signal is received.

↓

Does left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: The outdoor unit is abnormal. Beep is emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → The outdoor unit is normal.

Yes (Blinks)

↓

The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table. (10-2.3.)
Make sure to check at least two consecutive blinking cycles. ※2

↓

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
Turn OFF the power supply and turn it ON again.
Press RESET button of the remote controller.

Release the failure mode recall function according to the left mentioned procedure.

↓

Repair the defective parts.

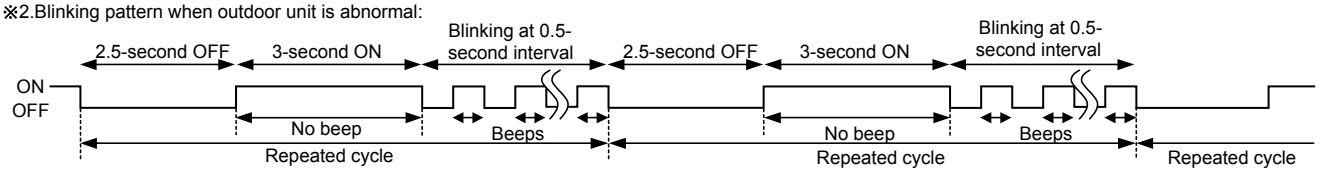
↓

Deleting the memorized abnormal condition

① After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" (10-2.1.).
② Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③ Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④ Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

NOTE: 1. Make sure to release the failure mode recall function once it's set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2.Blinking pattern when outdoor unit is abnormal:



3. Outdoor unit failure mode table

MUZ-A09/12/15/17NA MUY-A15/17NA

The left lamp of OPERATION INDICATOR lamp (Indoor unit)	Abnormal point (Failure mode / protection)	LED indication (Outdoor P.C. board)	Condition	Correspondence	Indoor/outdoor unit failure mode recall function	Outdoor unit failure mode recall function
OFF	None (Normal)	—	—	—	—	—
2-time flash 2.5 seconds OFF	Outdoor power system	—	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started.	• Reconnect connectors. • Refer to 10-5. Ⓐ "How to check inverter/ compressor". • Check stop valve.	○	○
3-time flash 2.5 seconds OFF	Discharge temperature thermistor	1-time flash every 2.5 seconds	Thermistor shorts or opens during compressor running.	• Refer to 10-5.Ⓖ "Check of outdoor thermistors". ❉Defective outdoor thermistors can be identified by checking the blinking pattern of LED.	○	○
	Defrost thermistor (MSZ)					
	Fin temperature thermistor	3-time flash 2.5 seconds OFF				
	P.C. board temperature thermistor	4-time flash 2.5 seconds OFF				
	Ambient temperature thermistor	2-time flash 2.5 seconds OFF				
4-time flash 2.5 seconds OFF	Overcurrent	11-time flash 2.5 seconds OFF	24 A (09/12) / 26.5 A (15/17) current flows into intelligent power module.	• Reconnect compressor connector. • Refer to 10-5.Ⓐ "How to check inverter/ compressor". • Check stop valve.	—	○
	Compressor synchronous abnormality (Compressor start-up failure protection)	12-time flash 2.5 seconds OFF	Waveform of compressor current is distorted.	• Reconnect compressor connector. • Refer to 10-5.Ⓐ "How to check inverter/ compressor".	—	○
5-time flash 2.5 seconds OFF	Discharge temperature	—	Temperature of discharge temperature thermistor exceeds 241°F (116°C), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 10-5.Ⓛ "Check of LEV".	—	○
6-time flash 2.5 seconds OFF	High pressure	—	Indoor coil thermistor temperature exceeds 158°F (70°C) in HEAT mode. (MUZ) Defrost thermistor exceeds 158°F (70° C) in COOL mode.	• Check refrigerant circuit and refrigerant amount. • Check stop valve.	—	○
7-time flash 2.5 seconds OFF	Fin temperature / P.C. board temperature	7-time flash 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 180°F (82°C) (09/12) /188° F (86.5°C) (15/17), or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 176°F (80°C).	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 10-5.Ⓘ "Check of outdoor fan motor".	—	○
8-time flash 2.5 seconds OFF	Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	• Refer to 10-5.Ⓘ "Check of outdoor fan motor". • Refer to 10-5.Ⓜ "Check of inverter P.C. board".	—	○
9-time flash 2.5 seconds OFF	Nonvolatile memory data	5-time flash 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	• Replace the inverter P.C. board.	○	○
10-time flash 2.5 seconds OFF	Discharge temperature	—	Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.	• Refer to 10-5.Ⓛ "Check of LEV". • Check refrigerant circuit and refrigerant amount.	—	○
11-time flash 2.5 seconds OFF	DC voltage	8-time flash 2.5 seconds OFF	DC voltage of inverter cannot be detected normally.	• Refer to 10-5.Ⓐ "How to check inverter/ compressor".	—	○
	Each phase current of compressor	9-time flash 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.			
12-time flash 2.5 seconds OFF	Overcurrent Compressor open-phase	10-time flash 2.5 seconds OFF	24 A (09/12) / 26.5 A (15/17) current flows into intelligent power module (IPM). The open-phase operation of compressor is detected. The interphase short out occurs in the output of the intelligent power module (IPM). The compressor winding shorts out.	• Reconnect compressor connector. • Refer to 10-5.Ⓐ "How to check inverter/ compressor"	—	○
14-time flash 2.5 seconds OFF	Outdoor unit (Other abnormality)	—	The inverter P.C. board is defective.	• Replace the inverter P.C. board.	—	○

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (10-3.).

MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

The left lamp of OPERATION INDICATOR lamp (Indoor unit)	Abnormal point (Failure mode / protection)	LED indication (Outdoor P.C. board)		Condition	Correspondence	Indoor/outdoor unit failure mode recall function
		LED1	LED2			
OFF	None (Normal)	Lighting	Lighting	—	—	—
2-time flash	Outdoor power system	Lighting	Lighting	IPM protection stop or lock protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or converter protection stop or bus-bar voltage protection stop is continuously performed 3 times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 10-5.Ⓐ "How to check inverter/compressor". • Check the stop valve.	○
3-time flash	Discharge temperature thermistor	Lighting	Once	Thermistor shorts or opens during compressor running.	• Refer to 10-5.Ⓖ "Check of outdoor thermistors".	○
	Defrost thermistor (**MUZ**)	Lighting	Once			
	Ambient temperature thermistor	Lighting	Twice			
	Fin temperature thermistor	Lighting	3 times			
	P.C. board temperature thermistor	Lighting	4 times		• Replace the outdoor electronic control P.C. board.	
	Outdoor heat exchanger temperature thermistor	Lighting	9 times		• Refer to 10-5.Ⓖ "Check of outdoor thermistors".	
4-time flash	Overcurrent	Once	Goes out	28 A current flows into intelligent power module.	• Reconnect compressor connector. • Refer to 10-5.Ⓐ "How to check inverter/compressor. • Check the stop valve.	—
5-time flash	Discharge temperature	Lighting	Lighting	Discharge temperature exceeds 241°F (116° C) during operation. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 10-5.Ⓛ "Check of LEV".	—
6-time flash	High pressure	Lighting	Lighting	The outdoor heat exchanger temperature exceeds 158°F (70°C) during cooling or the indoor gas pipe temperature exceeds 158°F (70 °C) during heating.	• Check refrigerant circuit and refrigerant amount. • Check the stop valve.	—
7-time flash	Fin temperature	3 times	Goes out	The fin temperature exceeds 189°F (87°C) during operation.	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 10-5.Ⓘ "Check of outdoor fan motor".	—
	P.C. board temperature	4 times	Goes out	The P.C. board temperature exceeds 158°F (70° C) during operation.		
8-time flash	Outdoor fan motor	Lighting	Lighting	Failure occurs continuously three times within 30 seconds after the fan gets started.	• Refer to 10-5.Ⓘ "Check of outdoor fan motor".	—
9-time flash	Nonvolatile memory data	Lighting	5 times	Nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.	○
10-time flash	Discharge temperature	Lighting	Lighting	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 102°F (39°C) for more than 20 minutes.	• Check refrigerant circuit and refrigerant amount. • Refer to 10-5.Ⓛ "Check of LEV".	—
11-time flash	Communication error between P.C. boards	Lighting	6 times	Communication error occurs between the electronic control P.C. board and power board for more than 10 seconds.	• Check the connecting wire between outdoor electronic control P.C. board and power board.	—
				The communication between boards protection stop is continuously performed twice.		○
	Current sensor	Lighting	7 times	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.	—
				Current sensor protection stop is continuously performed twice.		○
	Zero cross detecting circuit	5 times	Goes out	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among electronic control P.C. board, noise filter P.C. board and power board.	—
				The protection stop of the zero cross detecting circuit is continuously performed 10 times.		○
	Converter	5 times	Goes out	A failure is detected in the operation of the converter during operation.	• Check the voltage of power supply. • Replace the power board.	—
	Bus-bar voltage (1)	5 times	Goes out	The bus-bar voltage exceeds 400 V or falls to 200 V or below during compressor operating.		
	Bus-bar voltage (2) ✻ Even if this protection stop is performed continuously 3 times, it does not mean the abnormality in outdoor power system.	6 times	Goes out	The bus-bar voltage exceeds 400 V or falls to 50 V or below during compressor operating.	• Check the voltage of power supply. • Replace the outdoor electronic control P.C. board.	

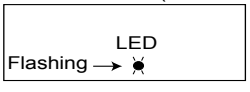
NOTE: Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (10-3.).

10-3. TROUBLESHOOTING CHECK TABLE
MUZ-A09/12/15/17NA MUY-A15/17NA

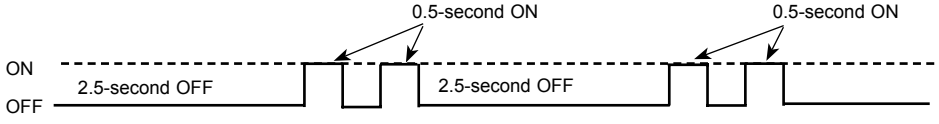
No.	Symptom	LED indication	Abnormal point / Condition	Condition	Correspondence
1	Outdoor unit does not operate.	1-time flash every 2.5 seconds	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started.	• Reconnect connector of compressor. • Refer to 10-5.Ⓐ "How to check inverter/compressor". • Check stop valve.
2			Outdoor thermistors	Discharge temperature thermistor, fin temperature thermistor, defrost thermistor (MUZ), P.C. board temperature thermistor or ambient temperature thermistor shorts or opens during compressor running.	• Refer to 10-5.Ⓖ "Check of outdoor thermistors".
3			Outdoor control system	Nonvolatile memory data cannot be read properly.	Replace inverter P.C. board.
4		6-time flash 2.5 seconds OFF	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	• Refer to 10-5.Ⓝ "How to check miswiring and serial signal error".
5		14-time flash 2.5 seconds OFF	Outdoor unit (Other abnormality)	Outdoor unit is defective.	Refer to 10-2.2. "Flow chart of the detailed outdoor unit failure mode recall function".
6	'Outdoor unit stops and restarts 3 minutes later' is repeated.	2-time flash 2.5 seconds OFF	Overcurrent protection	24 A (09/12) / 26.5 A (15/17) current flows into intelligent power module.	• Reconnect connector of compressor. • Refer to 10-5.Ⓐ "How to check inverter/compressor" • Check stop valve.
7		3-time flash 2.5 seconds OFF	Discharge temperature overheat protection	Temperature of discharge temperature thermistor exceeds 241 °F (116°C) compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 10-5.Ⓛ "Check of LEV".
8		4-timeflash 2.5 seconds OFF	Fin temperature / P.C. board temperature thermistor overheat protection	Temperature of fin temperature thermistor on the heat sink exceeds 180°F (82°C) (09/12) / 188°F (86.5°C) (15/17) or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 176°F (80°C).	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 10-5.Ⓘ "Check of outdoor fan motor".
9		5-time flash 2.5 seconds OFF	High pressure protection	Indoor coil thermistor exceeds 158°F (70°C) in HEAT mode. (MUZ) Defrost thermistor exceeds 158°F (70°C) in COOL mode.	• Check refrigerant circuit and refrigerant amount. • Check stop valve.
10		8-time flash 2.5 seconds OFF	Compressor synchronous abnormality	The waveform of compressor current is distorted.	• Reconnect connector of compressor. • Refer to 10-5.Ⓐ "How to check inverter/compressor"
11		10-time flash 2.5 seconds OFF	Outdoor fan motor	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	• Refer to 10-5.Ⓘ "Check of outdoor fan motor". • Refer to 10-5.Ⓜ "Check of inverter P.C. board".
12		12-timeflash 2.5 seconds OFF	Each phase current of compressor	Each phase current of compressor cannot be detected normally.	• Refer to 10-5.Ⓐ "How to check inverter/compressor"
13		13-time flash 2.5 seconds OFF	DC voltage	DC voltage of inverter cannot be detected normally.	• Refer to 10-5.Ⓐ "How to check inverter/compressor".
14	Outdoor unit operates.	1-time flash 2.5 seconds OFF	Frequency drop by current protection	Current from power outlet exceeds 9.2 A (09/12) / 11.1 A (15/17) compressor frequency lowers.	The unit is normal, but check the following. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
15		3-time flash 2.5 seconds OFF	Frequency drop by high pressure protection	Temperature of indoor coil thermistor exceeds 131°F (55°C) in HEAT mode (MUZ), compressor frequency lowers.	
			Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 46°F (8°C) or less in COOL mode, compressor frequency lowers.	
16		4-time flash 2.5 seconds OFF	Frequency drop by discharge temperature protection	Temperature of discharge temperature thermistor exceeds 232 °F (111°C), compressor frequency lowers.	• Check refrigerant circuit and refrigerant amount. • Refer to 10-5.Ⓛ "Check of LEV". • Refer to 10-5.Ⓖ "Check of outdoor thermistors".
17	Outdoor unit operates.	7-time flash 2.5 seconds OFF	Low discharge temperature protection	Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.	• Refer to 10-5.Ⓛ "Check of LEV". • Check refrigerant circuit and refrigerant amount.
18		8-time flash 2.5 seconds OFF	PAM protection PAM: Pulse Amplitude Modulation	The overcurrent flows into IGBT (Insulated Gate Bipolar transistor: TR821) or when the bus-bar voltage reaches 320 V or more, PAM stops and restarts.	This is not malfunction. PAM protection will be activated in the following cases: ①Instantaneous power voltage drop (Short time power failure) ②When the power supply voltage is high.
19		9-time flash 2.5 seconds OFF	Inverter check mode	The connector of compressor is disconnected, inverter check mode starts.	Check if the connector of the compressor is correctly connected. Refer to 10-5.Ⓐ "How to check inverter/compressor".

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 10-6.1.
2. LED is lighted during normal operation.

Inverter P.C. board (Parts side)



The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".

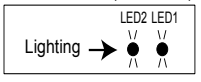


MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

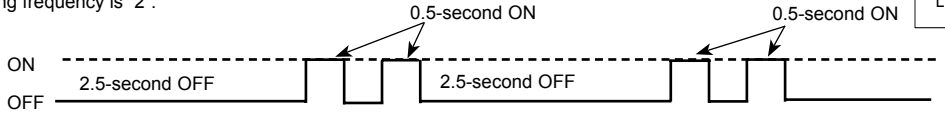
No.	Symptom	LED indication		Abnormal point / Condition	Condition	Correspondence
		LED1(Red)	LED2(Yellow)			
1	Outdoor unit does not operate.	Lightning	Twice	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or converter protection stop or bus-bar voltage protection stop is continuously performed 3 times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 10-5.Ⓐ "How to check inverter/compressor". • Check the stop valve.
2		Lightning	3 times	Discharge temperature thermistor	A short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	• Refer to 10-5.Ⓖ "Check of outdoor thermistor".
3		Lightning	4 times	Fin temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 10-5.Ⓖ "Check of outdoor thermistor". • Replace the outdoor electronic control P.C. board.
4		Lightning	5 times	Ambient temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 10-5.Ⓖ "Check of outdoor thermistor".
				Outdoor heat exchanger temperature thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	
				Defrost thermistor (**MUZ**)	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes of compressor stat-up.	
5		Lightning	6 times	Serial signal	The communication fails between the indoor and outdoor unit 3 minutes.	• Refer to 10-5.Ⓝ "How to check miswiring and serial signal error.
6		Lightning	7 times	Nonvolatile memory data	The nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.
7		Lightning	8 times	Current sensor	Current sensor protection stop is continuously performed twice.	• Replace the power board.
8		Lightning	11 times	Communication error between P.C. boards	The communication protection stop between boards is continuously performed twice.	• Check the connecting wire between outdoor electronic control P.C. board and power board.
9		Lightning	12 times	Zero cross detecting circuit	The protection stop of the zero cross detecting circuit is continuously performed 10 times.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.
10	'Outdoor unit stops and restarts 3 minutes later' is repeated.	Twice	Goes out	IPM protection	Overcurrent is detected after 30 minutes of compressor start-up.	• Reconnect compressor connector. • Refer to 10-5.Ⓐ "How to check inverter/compressor". • Check the stop valve. • Check the power module (PAM module).
				Lock protection	Overcurrent is detected within 30 minutes of compressor start-up.	
11		3 times	Goes out	Discharge temperature protection	Discharge temperature exceeds 241°F (116°C) during operation and compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.	• Check the amount of gas and refrigerant circuit. • Refer to 10-5.Ⓛ "Check of LEV".
12		4 times	Goes out	Fin temperature protection	The fin temperature exceeds 189°F (87°C) during operation.	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 10-5.Ⓘ "Check of outdoor fan motor".
				P.C. board temperature protection	The P.C. board temperature exceeds 158°F (70°C) during operation.	
13		5 times	Goes out	High-Pressure protection	The outdoor heat exchanger temperature exceeds 158°F (70°C) during cooling or indoor gas pipe temperature exceeds 158°F (70°C) during heating (**MUZ**).	• Check the amount of gas and the refrigerant circuit. • Check the stop valve.
14		8 times	Goes out	Converter protection	A failure is detected in the operation of the converter during operation.	• Replace the power board.
15		9 times	Goes out	Bus-bar voltage protection (1)	The bus-bar voltage exceeds 400 V or falls to 200 V or below during compressor operating.	• Check the voltage of power supply. • Replace the power board or the outdoor electronic control P.C. board. • Refer to 10-5.Ⓟ "Check of bus-bar voltage".
				Bus-bar voltage protection (2)	The bus-bar voltage exceeds 400 V or falls to 50 V or below during compressor operating.	
16		13 times	Goes out	Outdoor fan motor	Failure occurs continuously three times within 30 seconds after the fan gets started.	• Refer to 10-5.Ⓘ "Check of outdoor fan motor".
17		Lighting	8 times	Current sensor protection	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.
18		Lighting	11 times	Communication between P.C. boards protection	Communication error occurs between the outdoor electronic control P.C. board and power board for more than 10 seconds	• Check the connecting wire between outdoor electronic control P.C. board and power board.
19		Lighting	12 times	Zero cross detecting circuit protection	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 10-6.3.
2. LED is lighted during normal operation.

Outdoor electronic control P.C. board(Parts side)



The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is “2”.



The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is “2”.

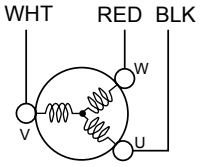
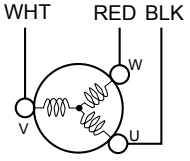
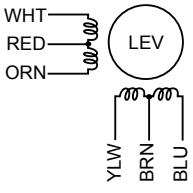
No.	Symptom	LED indication		Abnormal point/ Condition	Condition	Correspondence
		LED1(Red)	LED2(Yellow)			
20	Outdoor unit operates.	Once	Lighting	Primary current protection	The input current exceeds 15 A.	These symptoms do not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
				Secondary current protection	The current of the compressor exceeds 15 A.	
21		Twice	Lighting	High-Pressure protection (MUZ)	The indoor gas pipe temperature exceeds 113°F (45°C) during heating.	
				Defrosting in cooling	The indoor gas pipe temperature falls 37°F (3°C) or below during cooling.	
22		3 times	Lighting	Discharge temperature protection	The discharge temperature exceeds 212°F (100°C) during operation.	• Check refrigerant circuit and refrigerant amount. • Refer to 10-5.Ⓛ "Check of LEV". • Refer to 10-5.Ⓖ "Check of outdoor thermistors".
23		4 times	Lighting	Low discharge temperature protection	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 102°F (39°C) for more than 20 minutes.	• Refer to 10-5.Ⓛ "Check of LEV". • Check refrigerant circuit and refrigerant amount.
24		5 times	Lighting	Cooling high-pressure protection	The outdoor heat exchanger temperature exceeds 136°F (58°C) during operation.	This symptom does not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
25	Outdoor unit operates	9 times	Lighting	Inverter check mode	The unit is operated with emergency operation switch.	—
26		Lighting	Lighting	Normal	—	—

10-4. TROUBLE CRITERION OF MAIN PARTS

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUY-A15NA MUY-A17NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61)
(MUZ)
Fin temperature thermistor (RT64)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)</td><td>Measure the resistance with a tester.

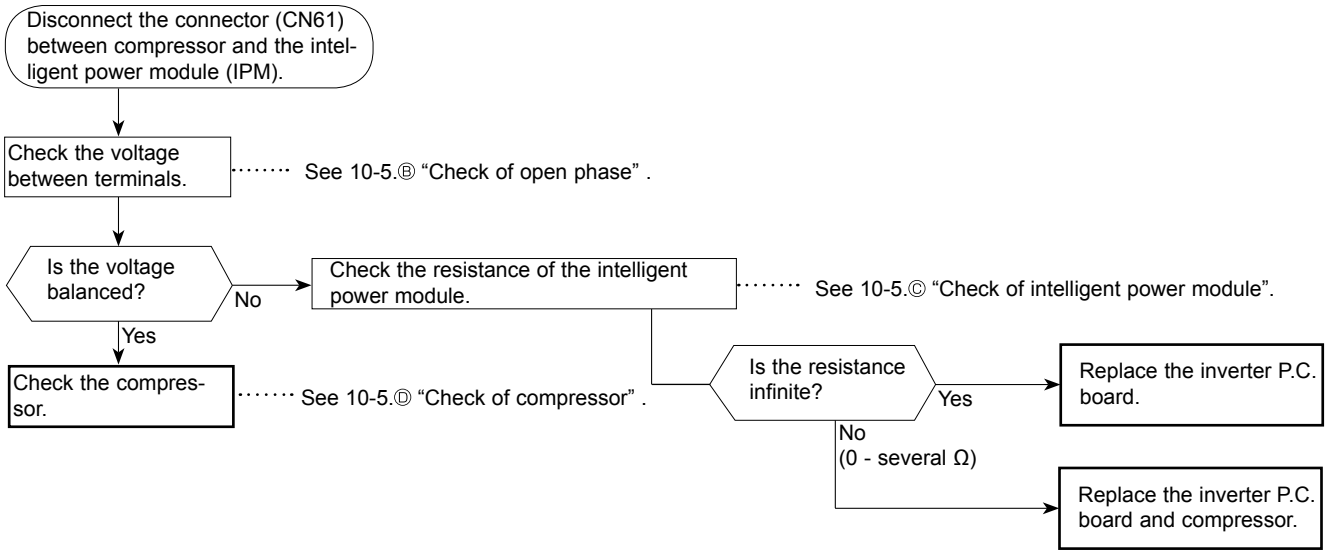
Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board" and 3. "Outdoor electronic control P.C. board", for the chart of thermistor.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)</td><td>Measure the resistance with a tester.
Before measurement, hold the thermistor with your hands to warm it up.

Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board" and 3. "Outdoor electronic control P.C. board", for the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor (MC)</td><td>Measure the resistance between the terminals with a tester.
(Temperature 14 - 104°F)
<table><tr><th></th><th colspan="3">Normal</th></tr><tr><th></th><th>A09/12</th><th>A15/17/24</th><th>GA24</th></tr><tr><td>U-V
U-W
V-W</td><td>0.43 - 0.53 Ω</td><td>0.39 - 0.49 Ω</td><td>0.86 - 1.06 Ω</td></tr></table></td><td>  </td></tr>
<tr><td>Outdoor fan motor (MF)</td><td>Measure the resistance between the terminals with a tester.
(Temperature 14 - 104°F)
<table><tr><th rowspan="2">Color of lead wire</th><th colspan="2">Normal</th></tr><tr><th>A09/12/15/17</th><th>A24 GA24</th></tr><tr><td>WHT – BLK
BLK – RED
RED – WHT</td><td>31 - 41 Ω</td><td>13 - 16 Ω</td></tr></table></td><td>  </td></tr>
<tr><td>R. V. coil (21S4)
(MUZ)</td><td>Measure the resistance between the terminals with a tester.
(Temperature 14 - 104°F)
<table><tr><th>Normal</th></tr><tr><td>1.20 - 1.55 kΩ</td></tr></table></td><td></td></tr>
<tr><td>Expansion valve coil (LEV)</td><td>Measure the resistance with a tester.
(Temperature: 14 - 104°F)
<table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>WHT – RED</td><td rowspan="4">38 - 50 Ω</td></tr><tr><td>RED – ORN</td></tr><tr><td>YLW – BRN</td></tr><tr><td>BRN – BLU</td></tr></table></td><td>  </td></tr>
</table>

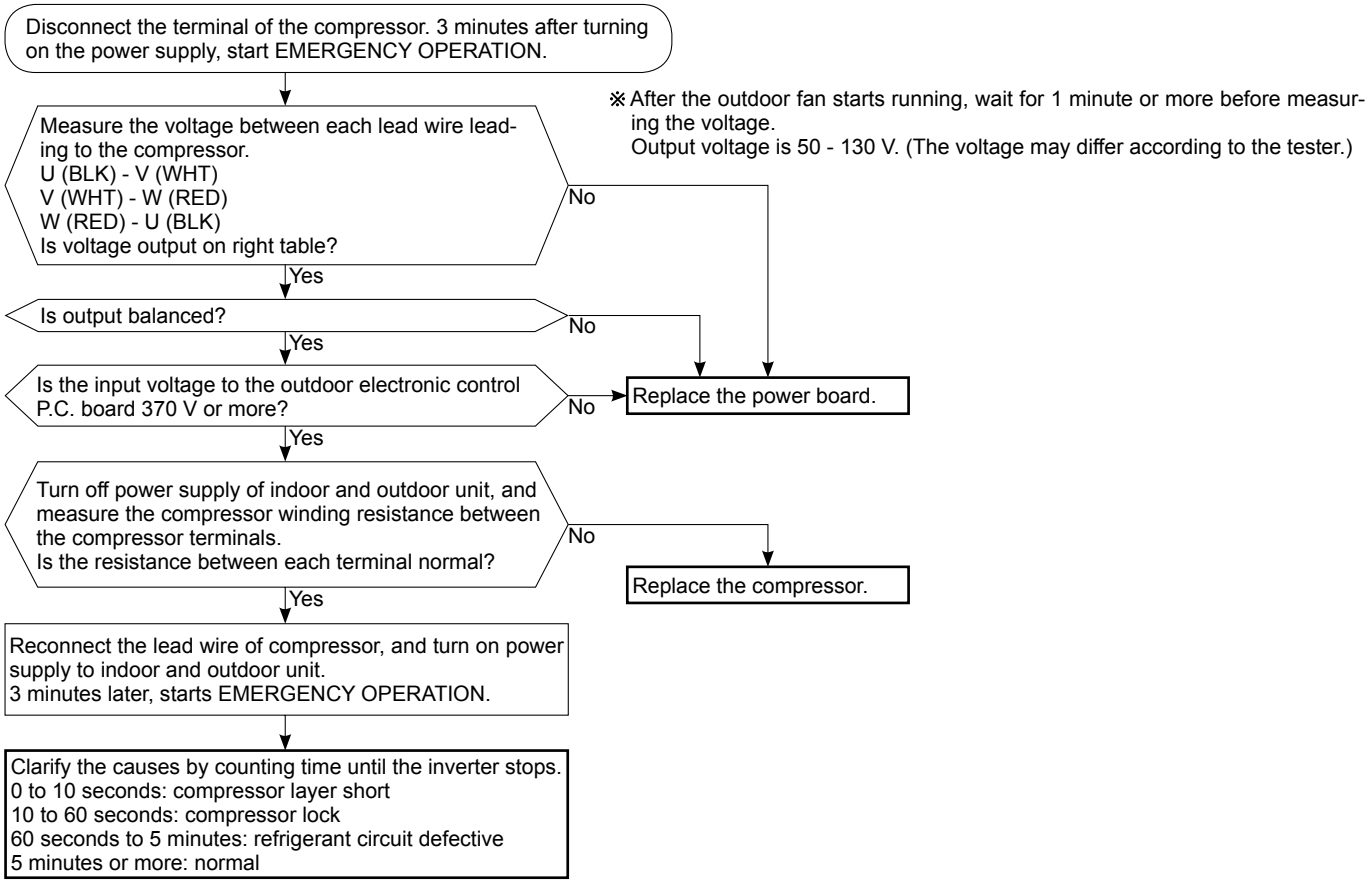
10-5. Troubleshooting flow

Ⓐ How to check inverter/compressor

MUZ-A09/12/15/17 MUY-A15/17


Disconnect the connector (CN61) between compressor and the intelligent power module (IPM).
Check the voltage between terminals.
See 10-5.Ⓑ “Check of open phase” .
Is the voltage balanced?
No
Check the resistance of the intelligent power module.
See 10-5.Ⓒ “Check of intelligent power module”.
Yes
Check the compressor.
See 10-5.Ⓓ “Check of compressor” .
Is the resistance infinite?
Yes
Replace the inverter P.C. board.
No
(0 - several Ω)
Replace the inverter P.C. board and compressor.

MUZ-A24 MUY-A24 MUZ-GA24 MUY-GA24


Disconnect the terminal of the compressor. 3 minutes after turning on the power supply, start EMERGENCY OPERATION.
※ After the outdoor fan starts running, wait for 1 minute or more before measuring the voltage.
Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)
Measure the voltage between each lead wire leading to the compressor.
U (BLK) - V (WHT)
V (WHT) - W (RED)
W (RED) - U (BLK)
Is voltage output on right table?
No
Yes
Is output balanced?
No
Yes
Is the input voltage to the outdoor electronic control P.C. board 370 V or more?
No
Replace the power board.
Yes
Turn off power supply of indoor and outdoor unit, and measure the compressor winding resistance between the compressor terminals.
Is the resistance between each terminal normal?
No
Replace the compressor.
Yes
Reconnect the lead wire of compressor, and turn on power supply to indoor and outdoor unit.
3 minutes later, starts EMERGENCY OPERATION.
Clarify the causes by counting time until the inverter stops.
0 to 10 seconds: compressor layer short
10 to 60 seconds: compressor lock
60 seconds to 5 minutes: refrigerant circuit defective
5 minutes or more: normal

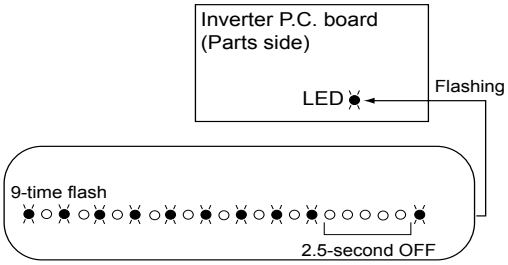
Ⓑ Check of open phase

MUZ-A09/12/15/17 MUY-A15/17

● With the connector between the compressor and the intelligent power module disconnected, activate the inverter and check if the inverter is normal by measuring the balance of voltage between the terminals.

Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)

<< Operation method>>
Start cooling or heating operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION: Refer to 7-7.)
<<Measurement point>>
at 3 points
BLK (U) - WHT (V)
BLK (U) - RED (W)
WHT(V) - RED (W)



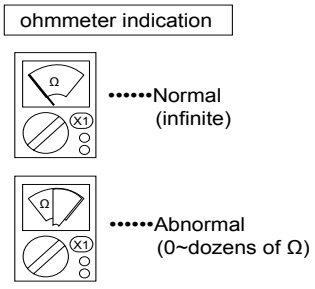
NOTE: 1. Output voltage varies according to power supply voltage.
2. Measure the voltage by analog type tester.
3. During this check, LED of inverter P.C. board flashes 9 times. (Refer to 10-6.1.)

Ⓒ Check of intelligent power module

MUZ-A09/12/15/17 MUY-A15/17

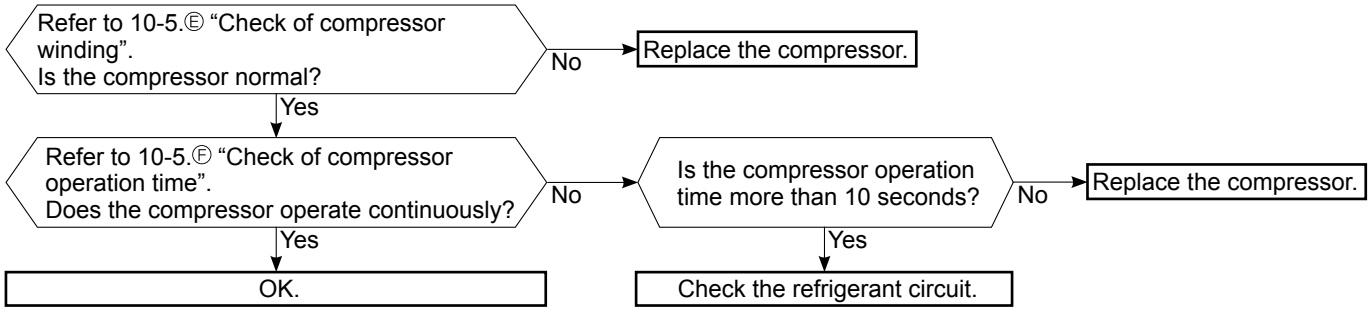
●Measure the resistance between the terminals on the intelligent power module.
<<Measurement point>>
At 6 points
BLK-WHT, WHT-BLK
BLK-RED, RED-BLK
WHT-RED, RED-WHT

<<Judgement>>
Infinite [Ω]·····Normal
0 - dozens of·····Abnormal (short)



Ⓓ Check of compressor

MUZ-A09/12/15/17 MUY-A15/17



Ⓔ Check of compressor winding

MUZ-A09/12/15/17 MUY-A15/17

● Disconnect the connector (CN61) between the compressor and intelligent power module, and measure the resistance between the compressor terminals.
<<Measurement point>>
At 3 points
BLK-WHT
BLK-RED
WHT-RED
※ Measure the resistance between the lead wires at 3 points.
<<Judgement>>
Refer to 10-4.
0 [Ω] ·····Abnormal (short)
Infinite [Ω] ·····Abnormal (open)
NOTE: 1. Be sure to zero the ohmmeter before measurement.
2. Winding resistance for each phase at 68°F (20°C).
Refer to "3. SPECIFICATION".

Ⓕ Check of compressor operation time

MUZ-A09/12/15/17 MUY-A15/17

- Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to over current.

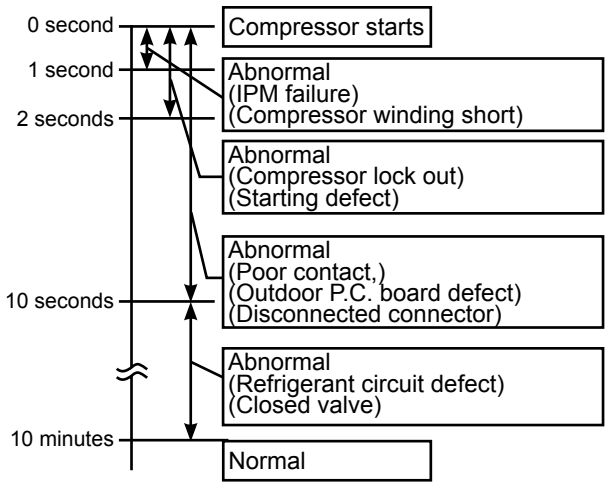
<<Operation method>>

Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit.
(TEST RUN OPERATION: Refer to 7-7.)

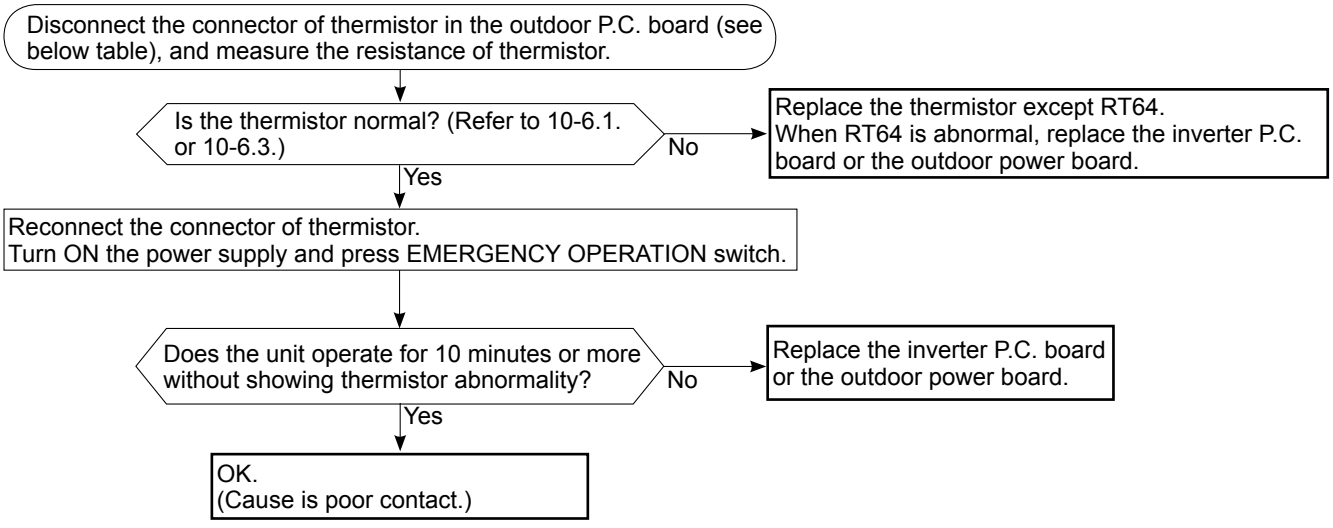
<<Measurement>>

Measure the time from the start of outdoor fan running to the stop of compressor due to overcurrent.

<<Judgement>>



Ⓖ Check of outdoor thermistors


Disconnect the connector of thermistor in the outdoor P.C. board (see below table), and measure the resistance of thermistor.
Is the thermistor normal? (Refer to 10-6.1. or 10-6.3.)
No
Replace the thermistor except RT64.
When RT64 is abnormal, replace the inverter P.C. board or the outdoor power board.
Yes
Reconnect the connector of thermistor.
Turn ON the power supply and press EMERGENCY OPERATION switch.
Does the unit operate for 10 minutes or more without showing thermistor abnormality?
No
Replace the inverter P.C. board or the outdoor power board.
Yes
OK.
(Cause is poor contact.)

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Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN641 pin 1 and pin 2	Inverter P.C. board
Discharge temperature	RT62	Between CN641 pin 3 and pin 4	
Fin temperature	RT64	Between CN642 pin 1 and pin 2	
Ambient temperature	RT65	Between CN643 pin 1 and pin 2	

MUZ-A24 MUY-A24 MUZ-GA24 MUY-GA24

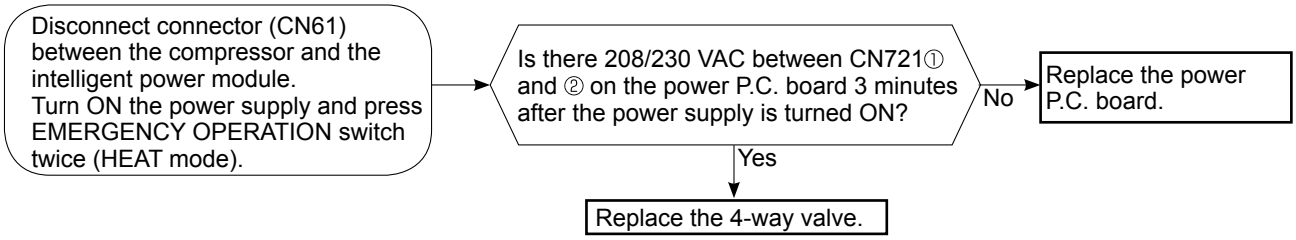
Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN661 pin 1 and pin 2	Outdoor electronic control P.C. board
Discharge temperature	RT62	Between CN661 pin 3 and pin 4	
Outdoor heat exchanger temperature	RT68	Between CN661 pin 7 and pin 8	
Ambient temperature	RT65	Between CN663 pin 1 and pin 2	
Fin temperature	RT64	Between CN3 pin 1 and pin 2	Outdoor power board

Ⓗ Check of R.V. coil

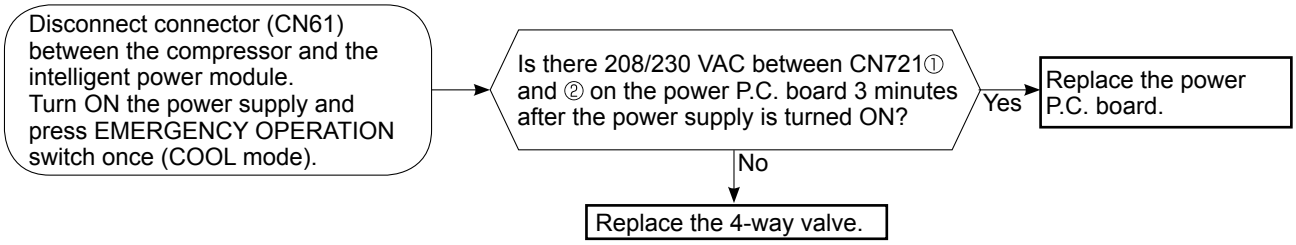
MUZ-A09/12/15/17

※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 10-4.
※ In case CN721 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.
Check if CN721 is connected.

Unit operates COOL mode even if it is set to HEAT mode.

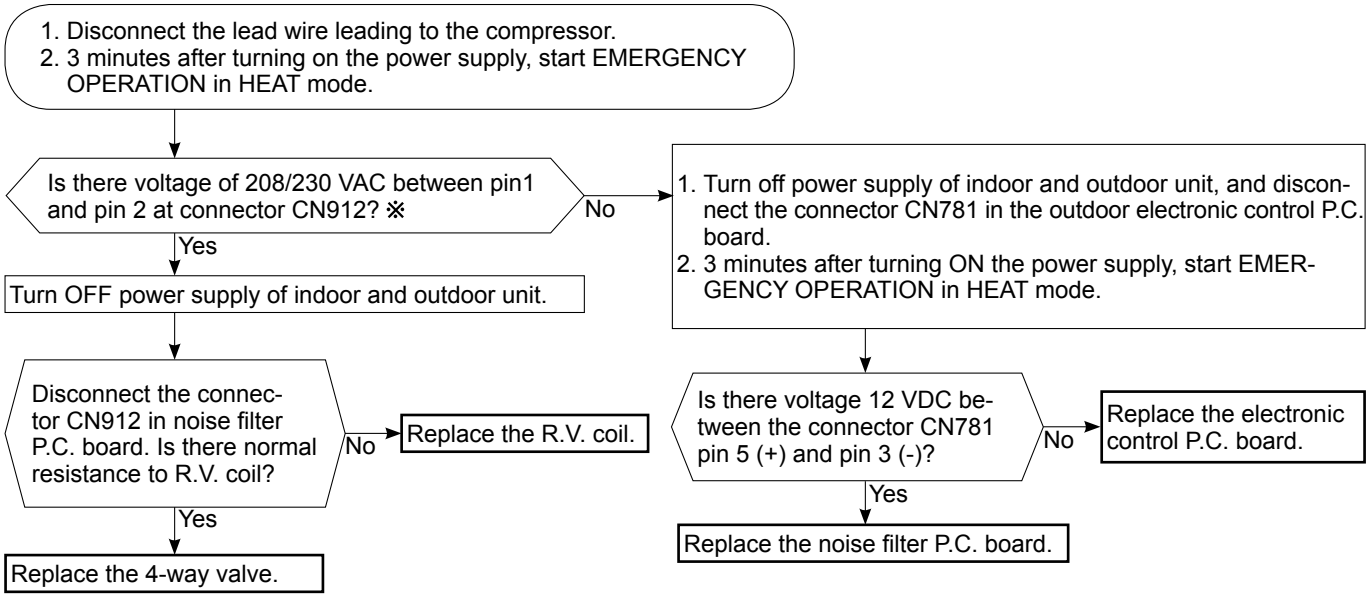

Disconnect connector (CN61) between the compressor and the intelligent power module.
Turn ON the power supply and press EMERGENCY OPERATION switch twice (HEAT mode).
Is there 208/230 VAC between CN721① and ② on the power P.C. board 3 minutes after the power supply is turned ON?
No
Replace the power P.C. board.
Yes
Replace the 4-way valve.

Unit operates HEAT mode even if it is set to COOL mode.

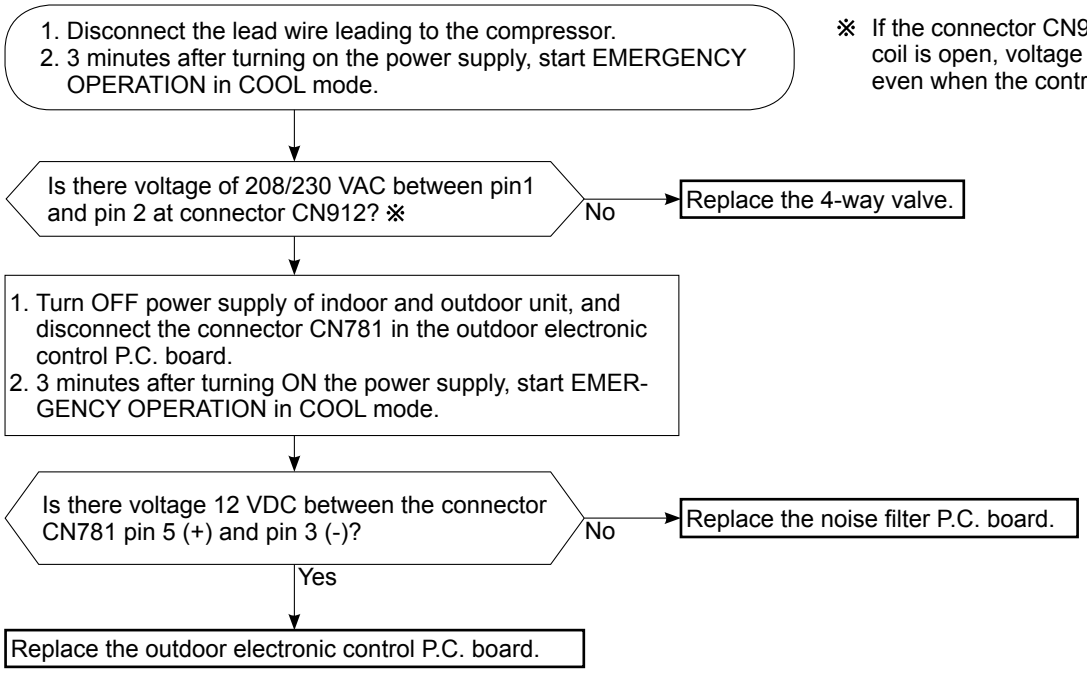

Disconnect connector (CN61) between the compressor and the intelligent power module.
Turn ON the power supply and press EMERGENCY OPERATION switch once (COOL mode).
Is there 208/230 VAC between CN721① and ② on the power P.C. board 3 minutes after the power supply is turned ON?
Yes
Replace the power P.C. board.
No
Replace the 4-way valve.

MUZ-A24 MUZ-GA24

• Heating operation does not work.


1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in HEAT mode.
Is there voltage of 208/230 VAC between pin1 and pin 2 at connector CN912? ※
No
Yes
Turn OFF power supply of indoor and outdoor unit.
Disconnect the connector CN912 in noise filter P.C. board. Is there normal resistance to R.V. coil?
No
Replace the R.V. coil.
Yes
Replace the 4-way valve.
1. Turn off power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in HEAT mode.
Is there voltage 12 VDC between the connector CN781 pin 5 (+) and pin 3 (-)?
No
Replace the electronic control P.C. board.
Yes
Replace the noise filter P.C. board.

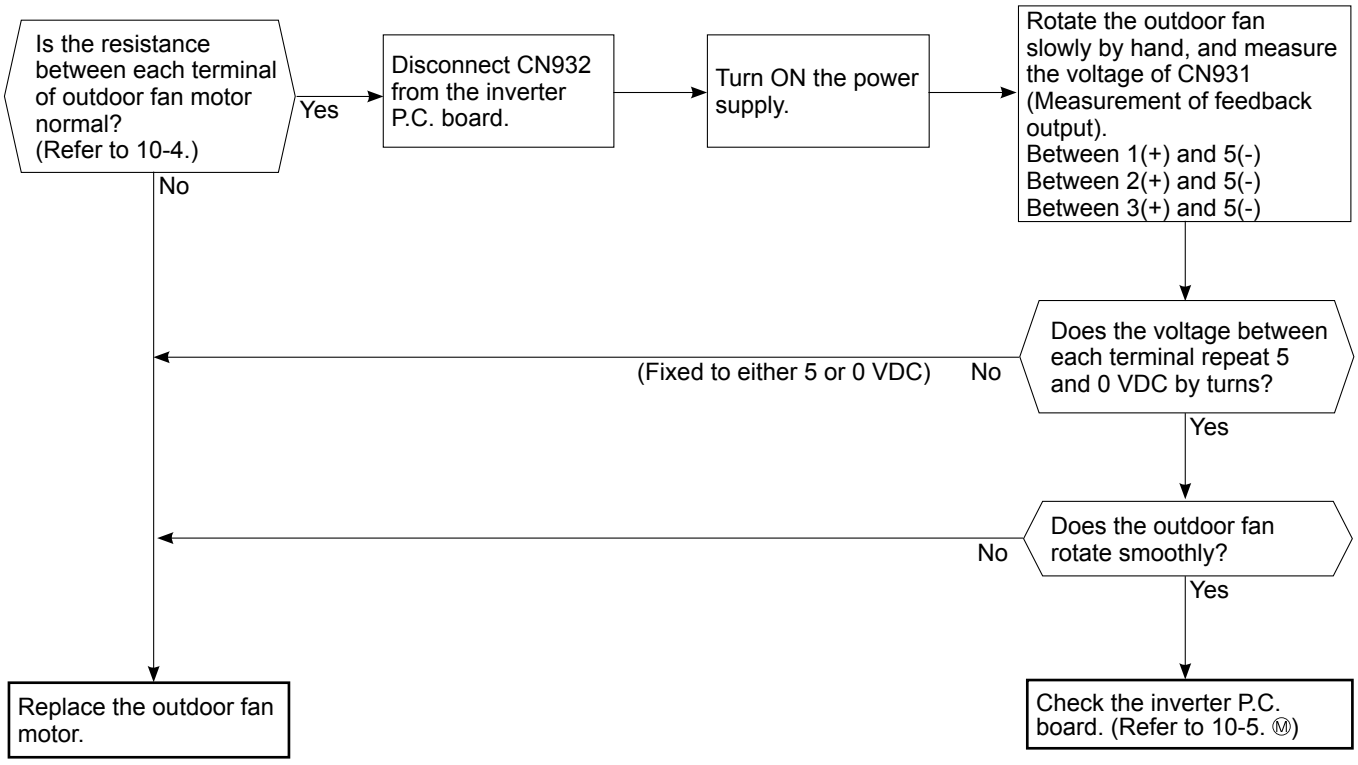
• Cooling operation does not work.


1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in COOL mode.
Is there voltage of 208/230 VAC between pin1 and pin 2 at connector CN912? ※
No
Replace the 4-way valve.
1. Turn OFF power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in COOL mode.
Is there voltage 12 VDC between the connector CN781 pin 5 (+) and pin 3 (-)?
No
Replace the noise filter P.C. board.
Yes
Replace the outdoor electronic control P.C. board.

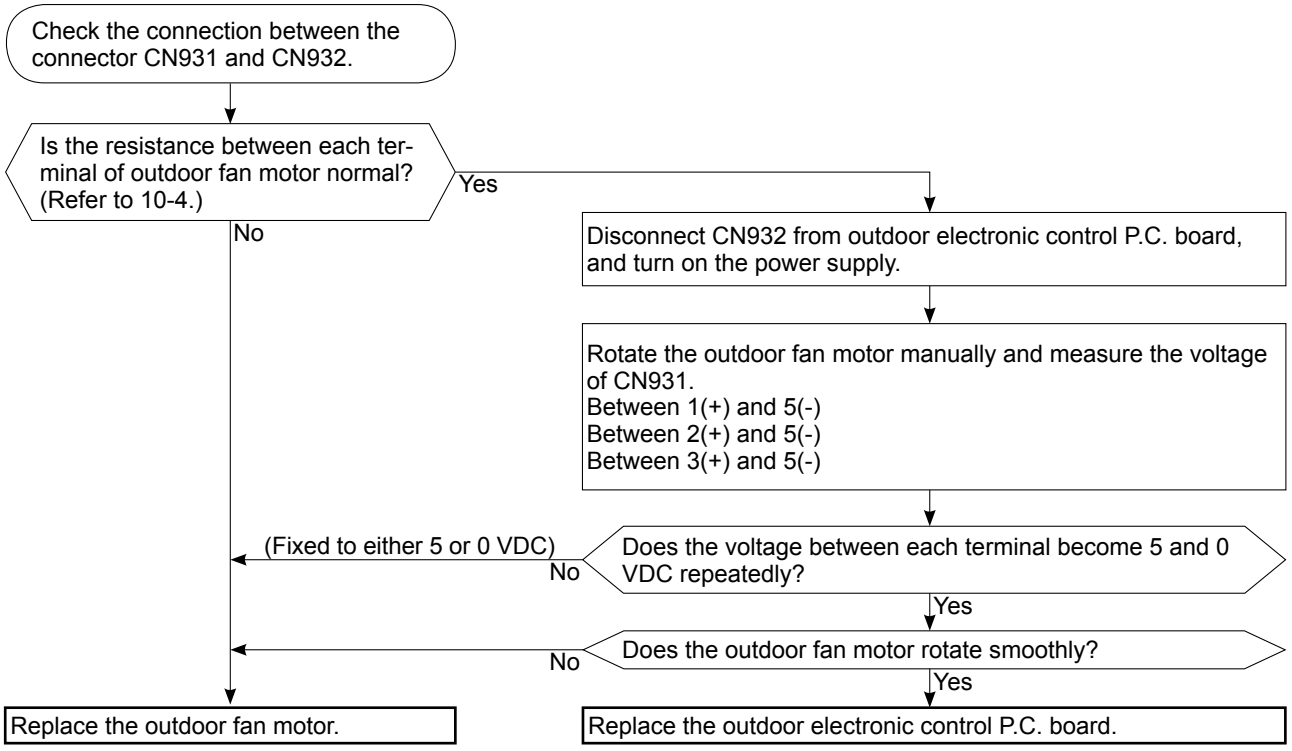
※ If the connector CN912 is disconnected or R.V. coil is open, voltage occurs between terminals even when the control is OFF.

Ⓘ Check of outdoor fan motor

MUZ-A09/12/15/17 MUY-A15/17

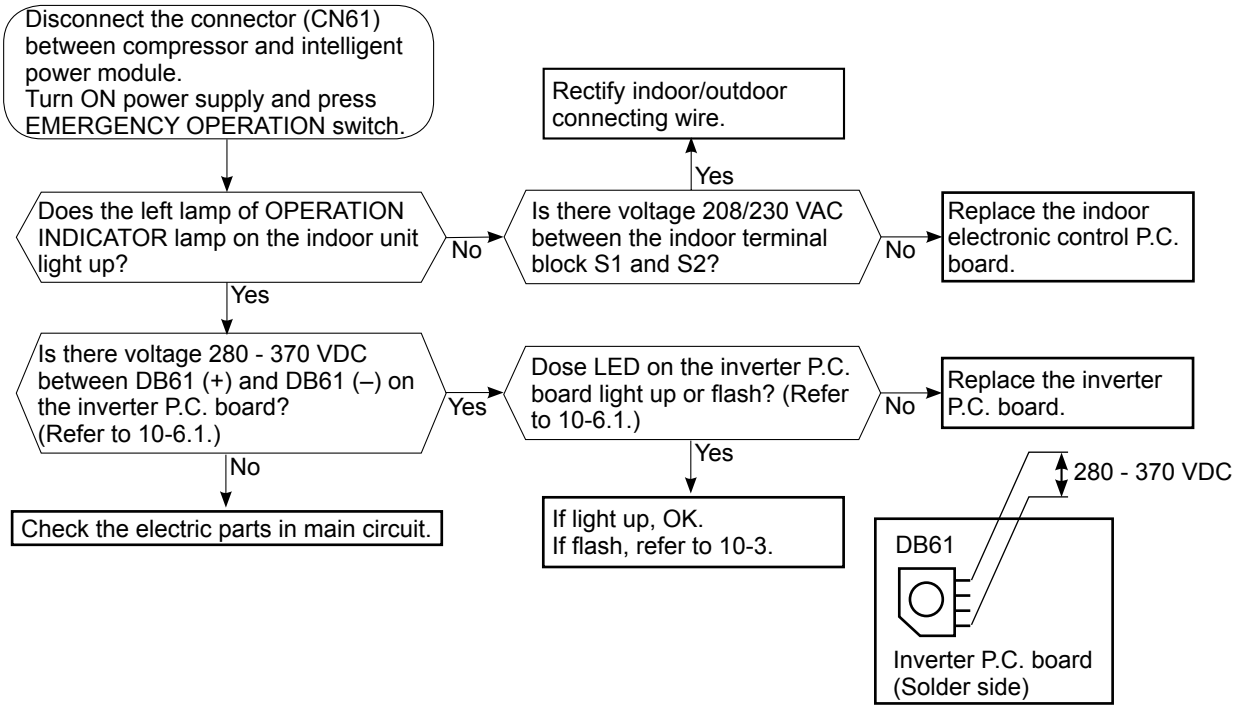

Is the resistance between each terminal of outdoor fan motor normal? (Refer to 10-4.)
Yes
No
Disconnect CN932 from the inverter P.C. board.
Turn ON the power supply.
Rotate the outdoor fan slowly by hand, and measure the voltage of CN931 (Measurement of feedback output).
Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)
Does the voltage between each terminal repeat 5 and 0 VDC by turns?
(Fixed to either 5 or 0 VDC)
No
Yes
Does the outdoor fan rotate smoothly?
No
Yes
Replace the outdoor fan motor.
Check the inverter P.C. board. (Refer to 10-5. Ⓜ)

MUZ-A24 MUY-A24 MUZ-GA24 MUY-GA24

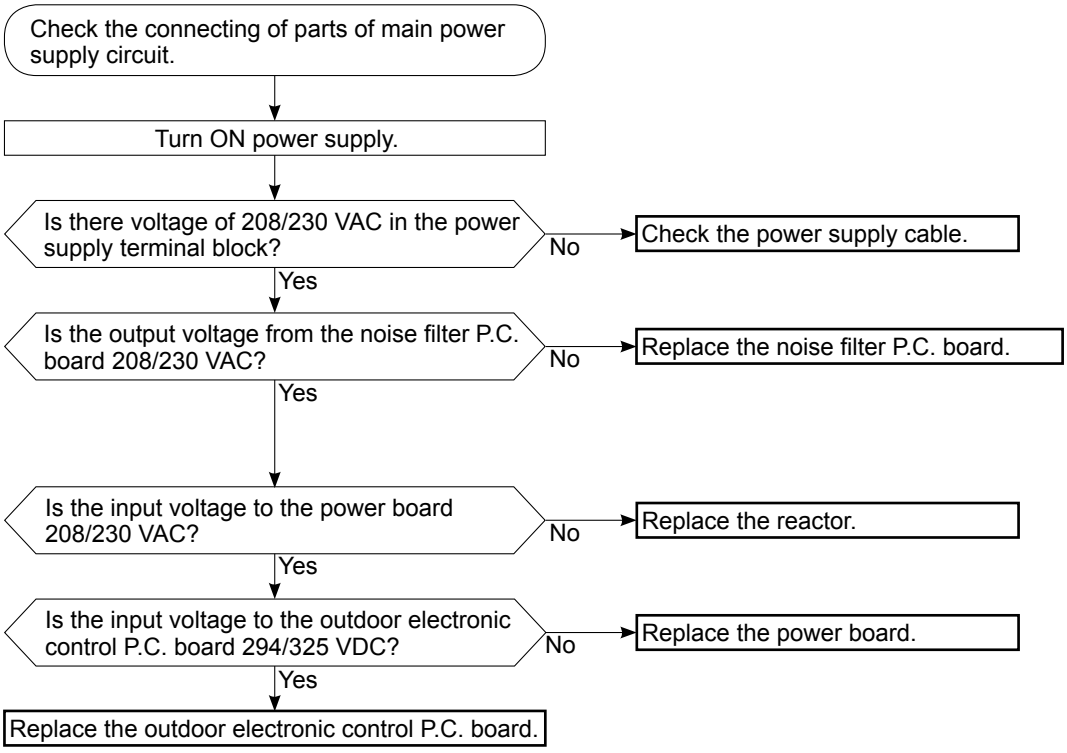

Check the connection between the connector CN931 and CN932.
Is the resistance between each terminal of outdoor fan motor normal? (Refer to 10-4.)
Yes
No
Disconnect CN932 from outdoor electronic control P.C. board, and turn on the power supply.
Rotate the outdoor fan motor manually and measure the voltage of CN931.
Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)
(Fixed to either 5 or 0 VDC)
No
Does the voltage between each terminal become 5 and 0 VDC repeatedly?
Yes
No
Does the outdoor fan motor rotate smoothly?
Yes
Replace the outdoor fan motor.
Replace the outdoor electronic control P.C. board.

Ⓙ Check of power supply

MUZ-A09/12/15/17 MUY-A15/17


Disconnect the connector (CN61) between compressor and intelligent power module.
Turn ON power supply and press EMERGENCY OPERATION switch.
Does the left lamp of OPERATION INDICATOR lamp on the indoor unit light up?
No
Is there voltage 208/230 VAC between the indoor terminal block S1 and S2?
No
Replace the indoor electronic control P.C. board.
Yes
Rectify indoor/outdoor connecting wire.
Yes
Is there voltage 280 - 370 VDC between DB61 (+) and DB61 (–) on the inverter P.C. board? (Refer to 10-6.1.)
Yes
Dose LED on the inverter P.C. board light up or flash? (Refer to 10-6.1.)
No
Replace the inverter P.C. board.
No
Check the electric parts in main circuit.
Yes
If light up, OK.
If flash, refer to 10-3.
280 - 370 VDC
DB61
Inverter P.C. board
(Solder side)

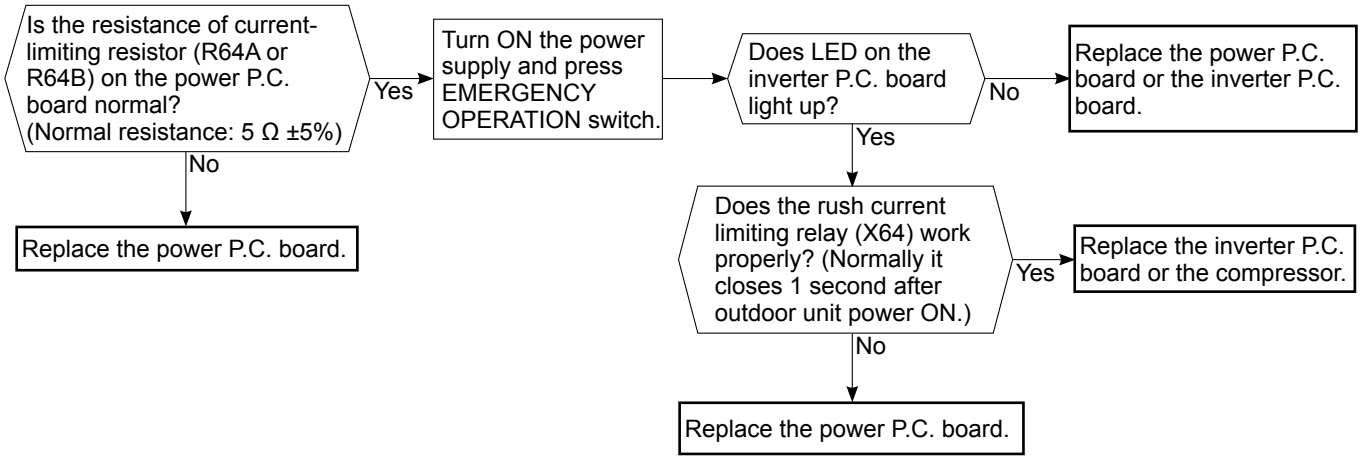
MUZ-A24 MUY-A24 MUZ-GA24 MUY-GA24


Check the connecting of parts of main power supply circuit.
Turn ON power supply.
Is there voltage of 208/230 VAC in the power supply terminal block?
No
Check the power supply cable.
Yes
Is the output voltage from the noise filter P.C. board 208/230 VAC?
No
Replace the noise filter P.C. board.
Yes
Is the input voltage to the power board 208/230 VAC?
No
Replace the reactor.
Yes
Is the input voltage to the outdoor electronic control P.C. board 294/325 VDC?
No
Replace the power board.
Yes
Replace the outdoor electronic control P.C. board.

Ⓚ Check of current-limiting resistor

MUZ-A09/12/15/17 MUY-A15/17

When the current-limiting resistor is open, the rush current limiting relay (X64) may not work properly.


Is the resistance of current-limiting resistor (R64A or R64B) on the power P.C. board normal? (Normal resistance: 5 Ω ±5%)
Yes
No
Replace the power P.C. board.
Turn ON the power supply and press EMERGENCY OPERATION switch.
Does LED on the inverter P.C. board light up?
No
Replace the power P.C. board or the inverter P.C. board.
Yes
Does the rush current limiting relay (X64) work properly? (Normally it closes 1 second after outdoor unit power ON.)
Yes
Replace the inverter P.C. board or the compressor.
No
Replace the power P.C. board.

- Check other electric parts in the main circuit together in the case that the current-limiting resistor is defective.

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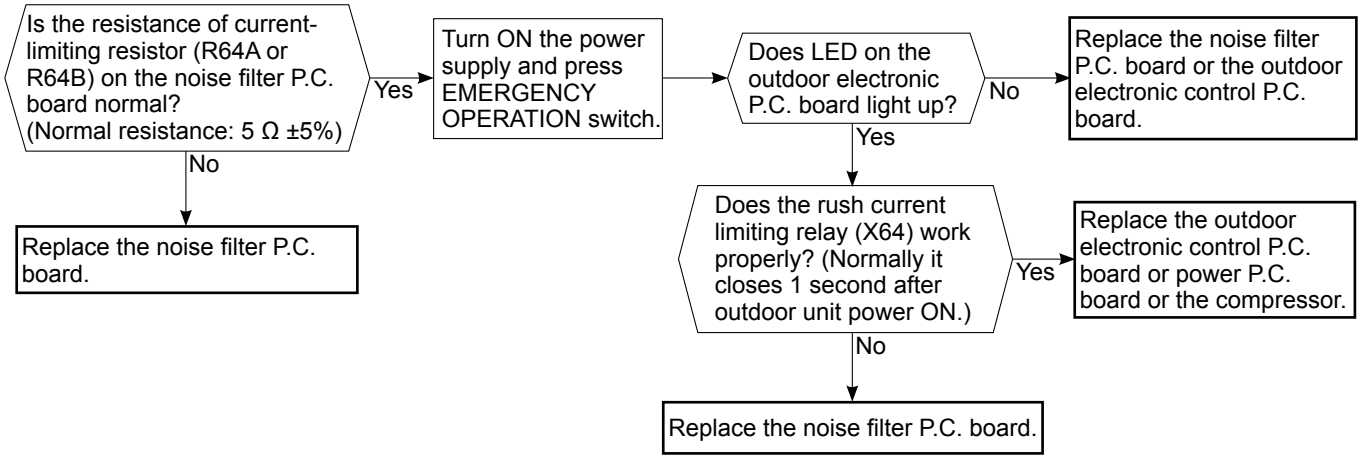
When the current-limiting resistor is open, the rush current limiting relay (X64) may not work properly.


Is the resistance of current-limiting resistor (R64A or R64B) on the noise filter P.C. board normal? (Normal resistance: 5 Ω ±5%)
Yes
No
Replace the noise filter P.C. board.
Turn ON the power supply and press EMERGENCY OPERATION switch.
Does LED on the outdoor electronic P.C. board light up?
No
Replace the noise filter P.C. board or the outdoor electronic control P.C. board.
Yes
Does the rush current limiting relay (X64) work properly? (Normally it closes 1 second after outdoor unit power ON.)
Yes
Replace the outdoor electronic control P.C. board or power P.C. board or the compressor.
No
Replace the noise filter P.C. board.

- Check other electric parts in the main circuit together in the case that the current-limiting resistor is defective.

Ⓛ Check of LEV (Expansion valve)

MUZ-A09/12/15/17 MUY-A15/17

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons after all LCD in operation display section of the remote controller is displayed after 3 seconds.

↓

Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

↓

Expansion valve operates in full-opening direction.

↓

Do you hear the expansion valve "click, click·····"?
Do you feel the expansion valve vibrate on touching it ?

Yes → OK

No ↓

Is LEV coil properly fixed to the expansion valve?

No → Properly fix the LEV coil to the expansion valve.

Yes ↓

Does the resistance of LEV coil have the characteristics? (Refer to 10-4.)

Yes → Measure each voltage between connector pins of CN724 on the inverter P.C. board.
1. Pin③(-) — Pin①(+)
2. Pin④(-) — Pin①(+)
3. Pin⑤(-) — Pin①(+)
4. Pin⑥(-) — Pin①(+)
Is there about 3 - 5 VAC between each?
NOTE: Measure the voltage with an analog tester.

No → Replace the inverter P.C. board.

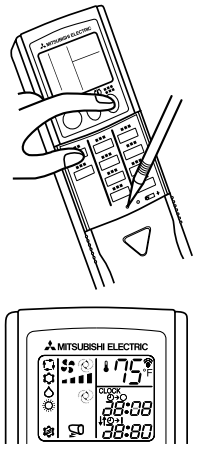
Yes ↓

Replace the expansion valve.

No ↓

Replace the LEV coil.

This figures show about MSZ-A09/12/15/17.



※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

NOTE: After check of LEV, do the undermentioned operations.
1. Turn OFF the power supply and turn ON again.
2. Press RESET button on the remote controller.

MUZ-A24 MUY-A24 MUZ-GA24 MUY-GA24

Turn ON power supply to the outdoor unit after checking LEV coil is mounted to the LEV body securely.

↓

Is "click - click" sound heard?
Or, do you feel vibration of the LEV coil with a hand?

Yes → Normal

No ↓

Disconnect the connector CN795.
Is there normal resistance to LEV coil?

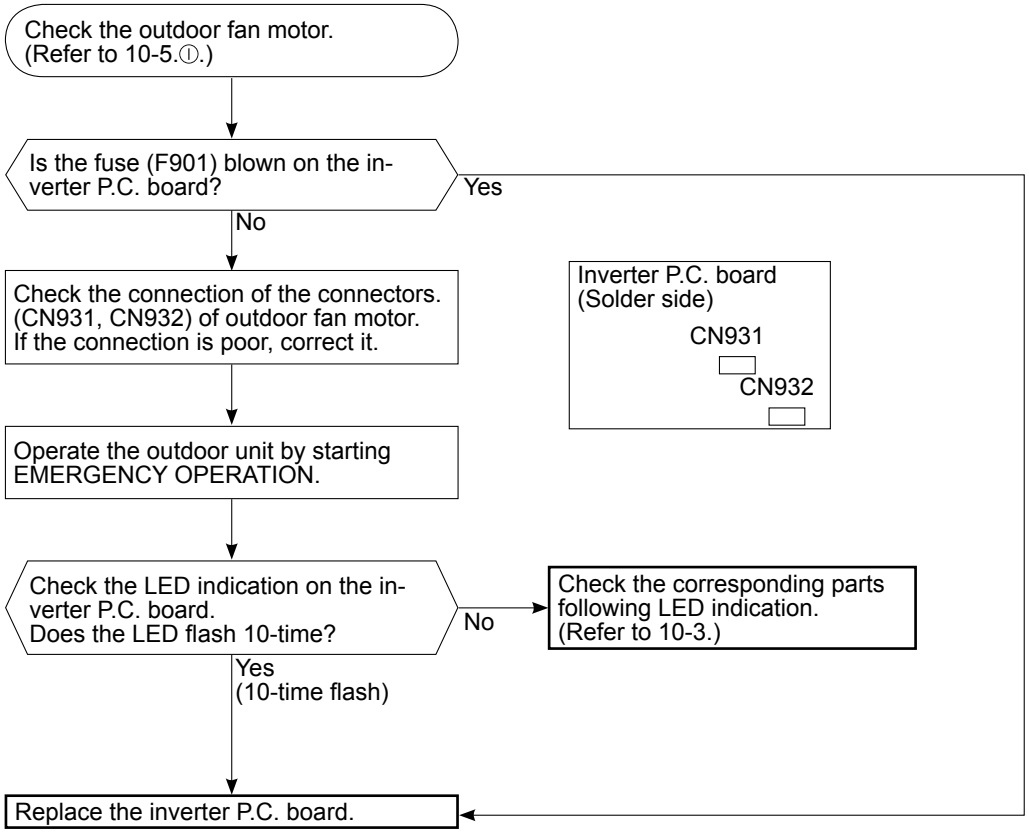
Yes → Replace the outdoor electronic control P.C. board.

No ↓

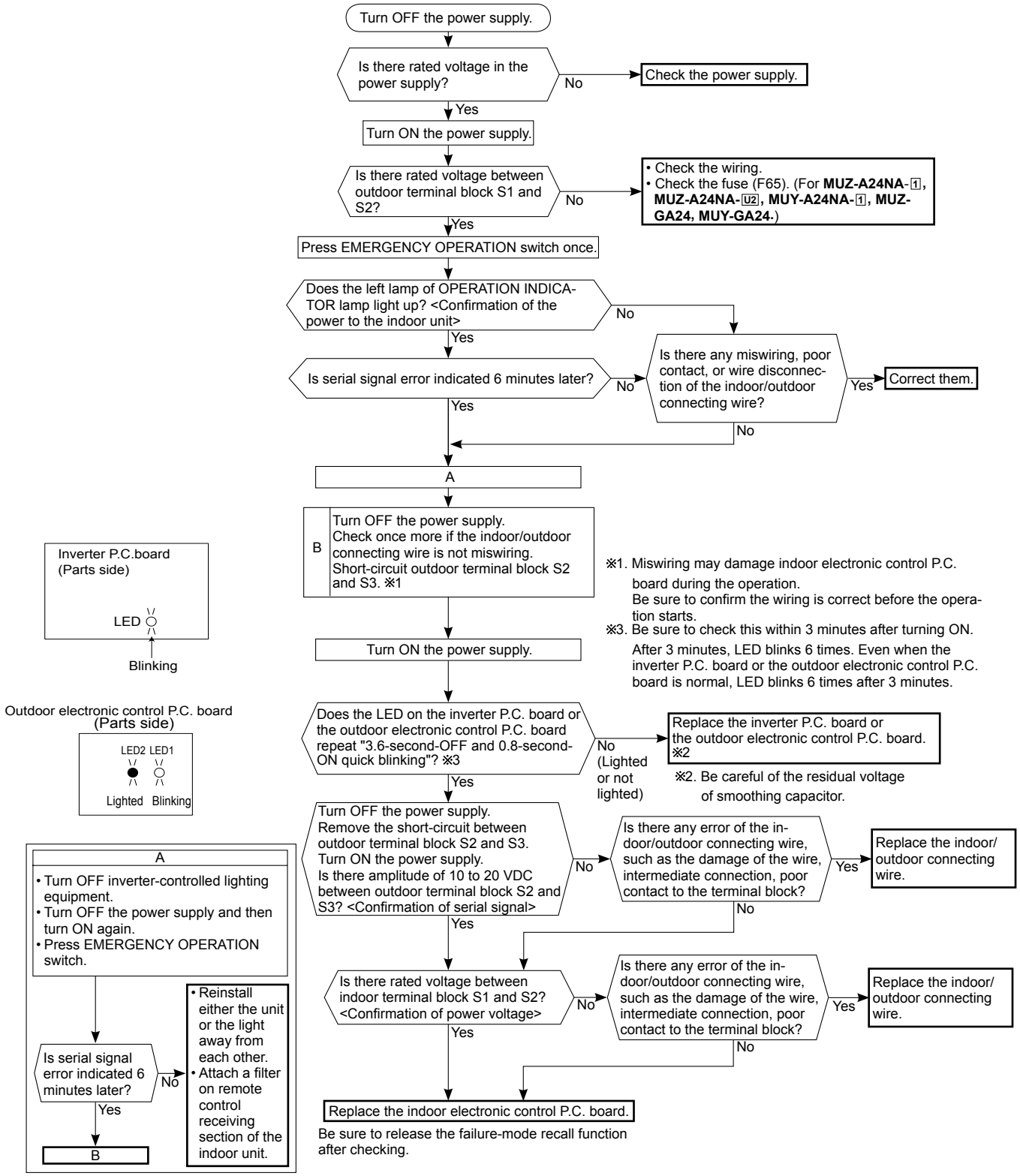
Replace the LEV coil.

Ⓜ Check of inverter P.C. board

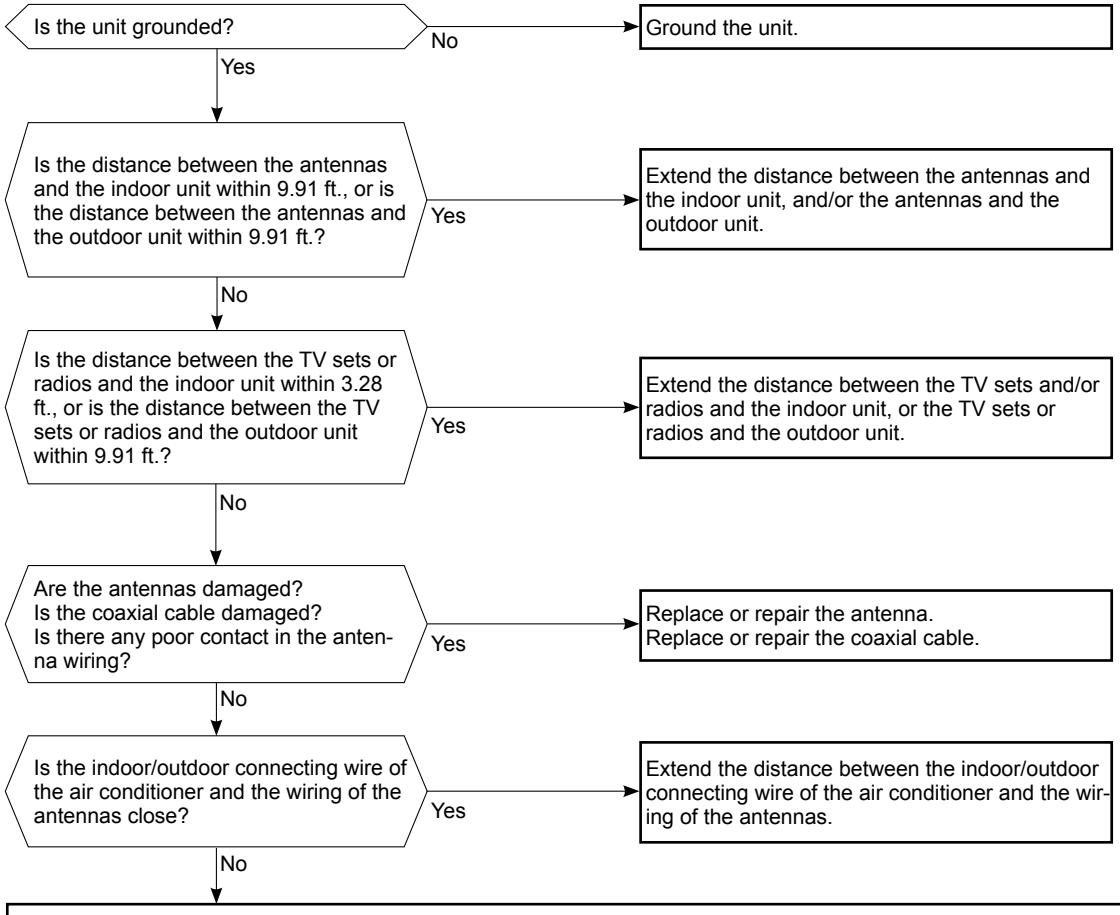
MUZ-A09/12/15/17 MUY-A15/17


Check the outdoor fan motor.
(Refer to 10-5.①.)
Is the fuse (F901) blown on the inverter P.C. board?
Yes
No
Check the connection of the connectors.
(CN931, CN932) of outdoor fan motor.
If the connection is poor, correct it.
Inverter P.C. board
(Solder side)
CN931
CN932
Operate the outdoor unit by starting EMERGENCY OPERATION.
Check the LED indication on the inverter P.C. board.
Does the LED flash 10-time?
No
Check the corresponding parts following LED indication.
(Refer to 10-3.)
Yes
(10-time flash)
Replace the inverter P.C. board.

Ⓝ How to check miswiring and serial signal error


Turn OFF the power supply.
Is there rated voltage in the power supply?
No
Check the power supply.
Yes
Turn ON the power supply.
Is there rated voltage between outdoor terminal block S1 and S2?
No
• Check the wiring.
• Check the fuse (F65). (For MUZ-A24NA-1, MUZ-A24NA-U2, MUY-A24NA-1, MUZ-GA24, MUY-GA24.)
Yes
Press EMERGENCY OPERATION switch once.
Does the left lamp of OPERATION INDICATOR lamp light up? <Confirmation of the power to the indoor unit>
No
Yes
Is serial signal error indicated 6 minutes later?
No
Is there any miswiring, poor contact, or wire disconnection of the indoor/outdoor connecting wire?
Yes
Correct them.
Yes
No
A
B
Turn OFF the power supply.
Check once more if the indoor/outdoor connecting wire is not miswiring.
Short-circuit outdoor terminal block S2 and S3. ※1
Turn ON the power supply.
Does the LED on the inverter P.C. board or the outdoor electronic control P.C. board repeat "3.6-second-OFF and 0.8-second-ON quick blinking"? ※3
No (Lighted or not lighted)
Replace the inverter P.C. board or the outdoor electronic control P.C. board. ※2
Yes
Turn OFF the power supply.
Remove the short-circuit between outdoor terminal block S2 and S3.
Turn ON the power supply.
Is there amplitude of 10 to 20 VDC between outdoor terminal block S2 and S3? <Confirmation of serial signal>
No
Is there any error of the indoor/outdoor connecting wire, such as the damage of the wire, intermediate connection, poor contact to the terminal block?
Yes
Replace the indoor/outdoor connecting wire.
No
Yes
Is there rated voltage between indoor terminal block S1 and S2? <Confirmation of power voltage>
No
Is there any error of the indoor/outdoor connecting wire, such as the damage of the wire, intermediate connection, poor contact to the terminal block?
Yes
Replace the indoor/outdoor connecting wire.
No
Yes
Replace the indoor electronic control P.C. board.
Be sure to release the failure-mode recall function after checking.
Inverter P.C.board (Parts side)
LED
Blinking
Outdoor electronic control P.C. board (Parts side)
LED2 LED1
Lighted Blinking
A
• Turn OFF inverter-controlled lighting equipment.
• Turn OFF the power supply and then turn ON again.
• Press EMERGENCY OPERATION switch.
Is serial signal error indicated 6 minutes later?
No
• Reinstall either the unit or the light away from each other.
• Attach a filter on remote control receiving section of the indoor unit.
Yes
B
※1. Miswiring may damage indoor electronic control P.C. board during the operation.
Be sure to confirm the wiring is correct before the operation starts.
※3. Be sure to check this within 3 minutes after turning ON.
After 3 minutes, LED blinks 6 times. Even when the inverter P.C. board or the outdoor electronic control P.C. board is normal, LED blinks 6 times after 3 minutes.
※2. Be careful of the residual voltage of smoothing capacitor.

Ⓞ Electromagnetic noise enters into TV sets or radios

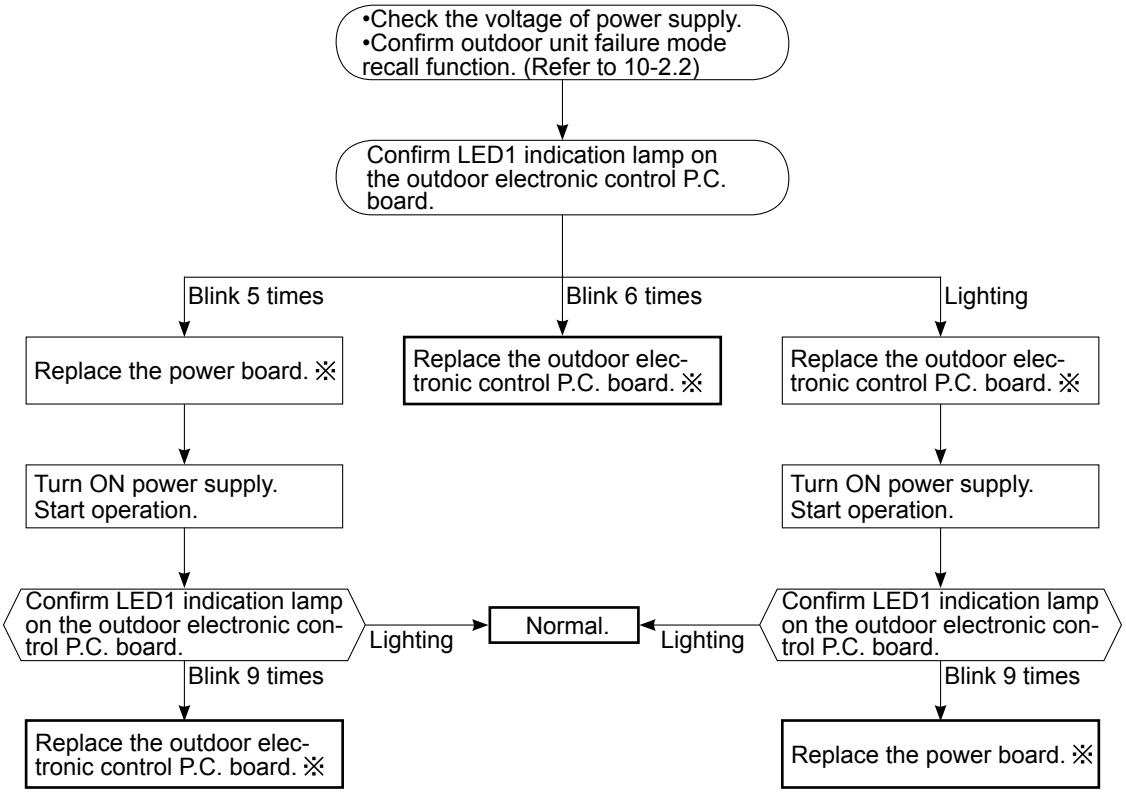

Is the unit grounded?
No
Ground the unit.
Yes
Is the distance between the antennas and the indoor unit within 9.91 ft., or is the distance between the antennas and the outdoor unit within 9.91 ft.?
Yes
Extend the distance between the antennas and the indoor unit, and/or the antennas and the outdoor unit.
No
Is the distance between the TV sets or radios and the indoor unit within 3.28 ft., or is the distance between the TV sets or radios and the outdoor unit within 9.91 ft.?
Yes
Extend the distance between the TV sets and/or radios and the indoor unit, or the TV sets or radios and the outdoor unit.
No
Are the antennas damaged?
Is the coaxial cable damaged?
Is there any poor contact in the antenna wiring?
Yes
Replace or repair the antenna.
Replace or repair the coaxial cable.
No
Is the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas close?
Yes
Extend the distance between the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas.
No

Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the followings before asking for service.

1. Devices affected by the electromagnetic noise
   TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of:
   indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, grounding wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in
   1) Turn OFF the power supply once, and then turn ON the power supply. In this situation, check for the electromagnetic noise.
   2) Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
   3) After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
   4) Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation, check for the electromagnetic noise.

Ⓟ Check of bus-bar voltage

MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA


•Check the voltage of power supply.
•Confirm outdoor unit failure mode recall function. (Refer to 10-2.2)
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Blink 5 times
Blink 6 times
Lighting
Replace the power board. ※
Replace the outdoor electronic control P.C. board. ※
Replace the outdoor electronic control P.C. board. ※
Turn ON power supply. Start operation.
Turn ON power supply. Start operation.
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Lighting
Normal.
Lighting
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Blink 9 times
Blink 9 times
Replace the outdoor electronic control P.C. board. ※
Replace the power board. ※

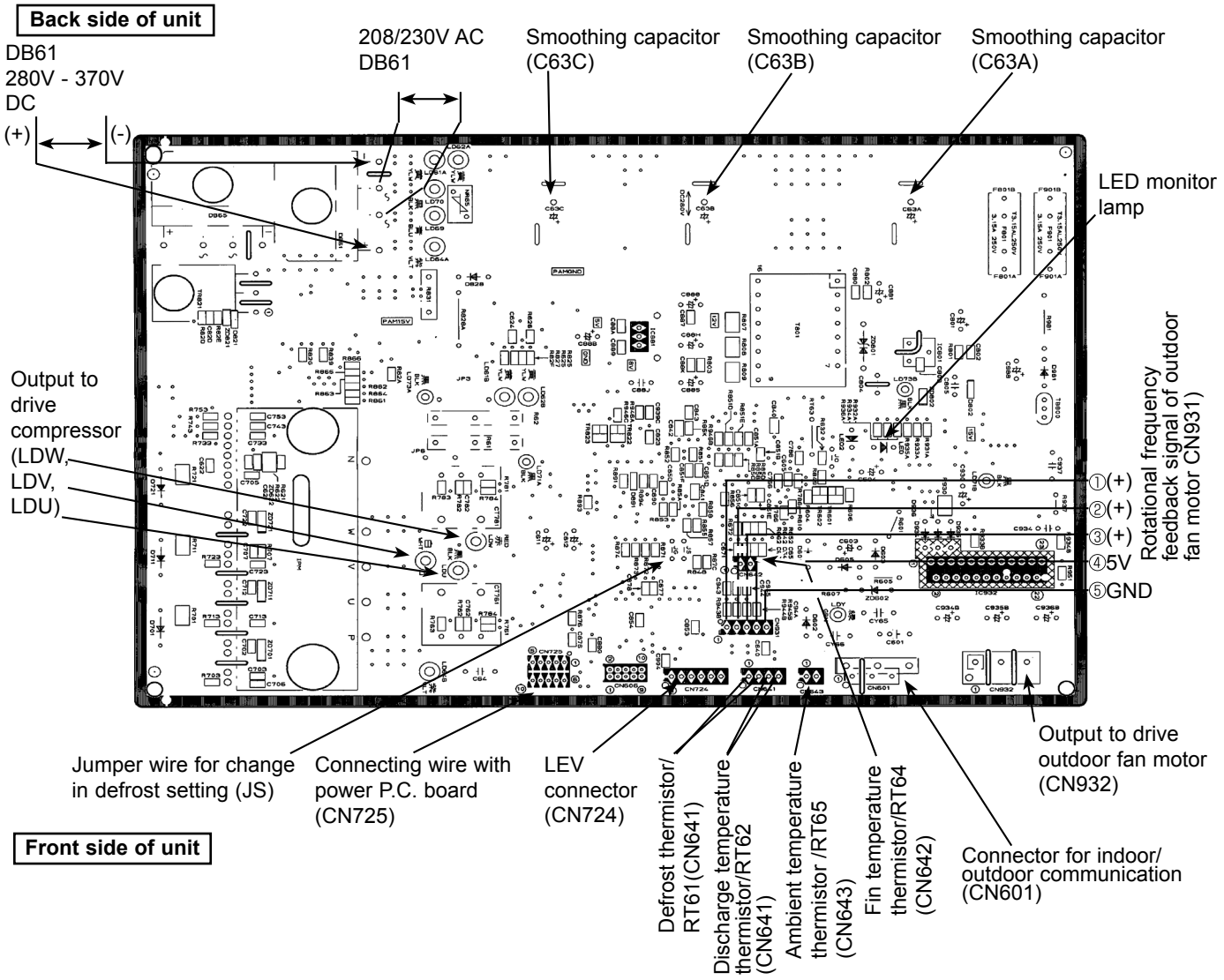
※ Turn OFF power supply before removing P.C. board.

10-6. TEST POINT DIAGRAM AND VOLTAGE

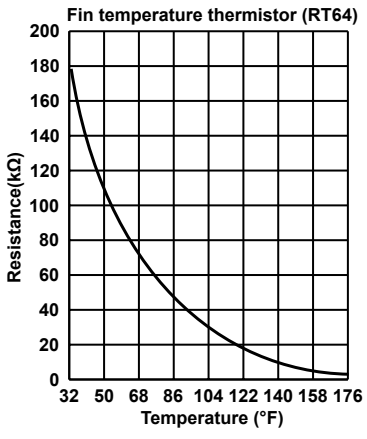
1. Inverter P.C. board

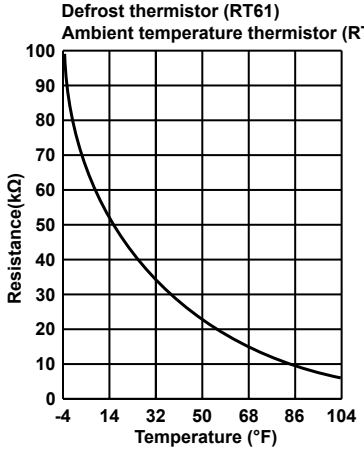
MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

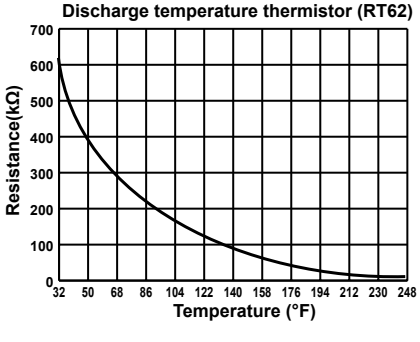
Back side of unit



Front side of unit

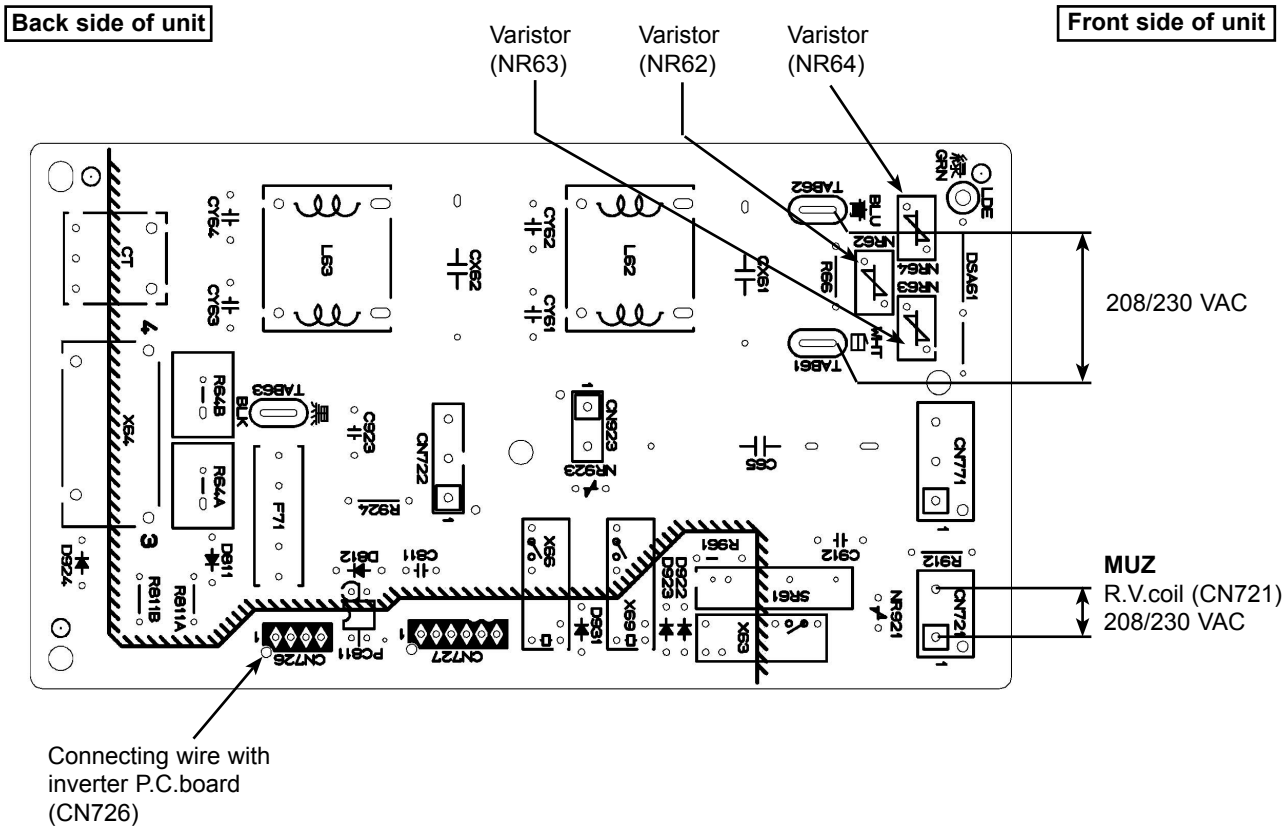




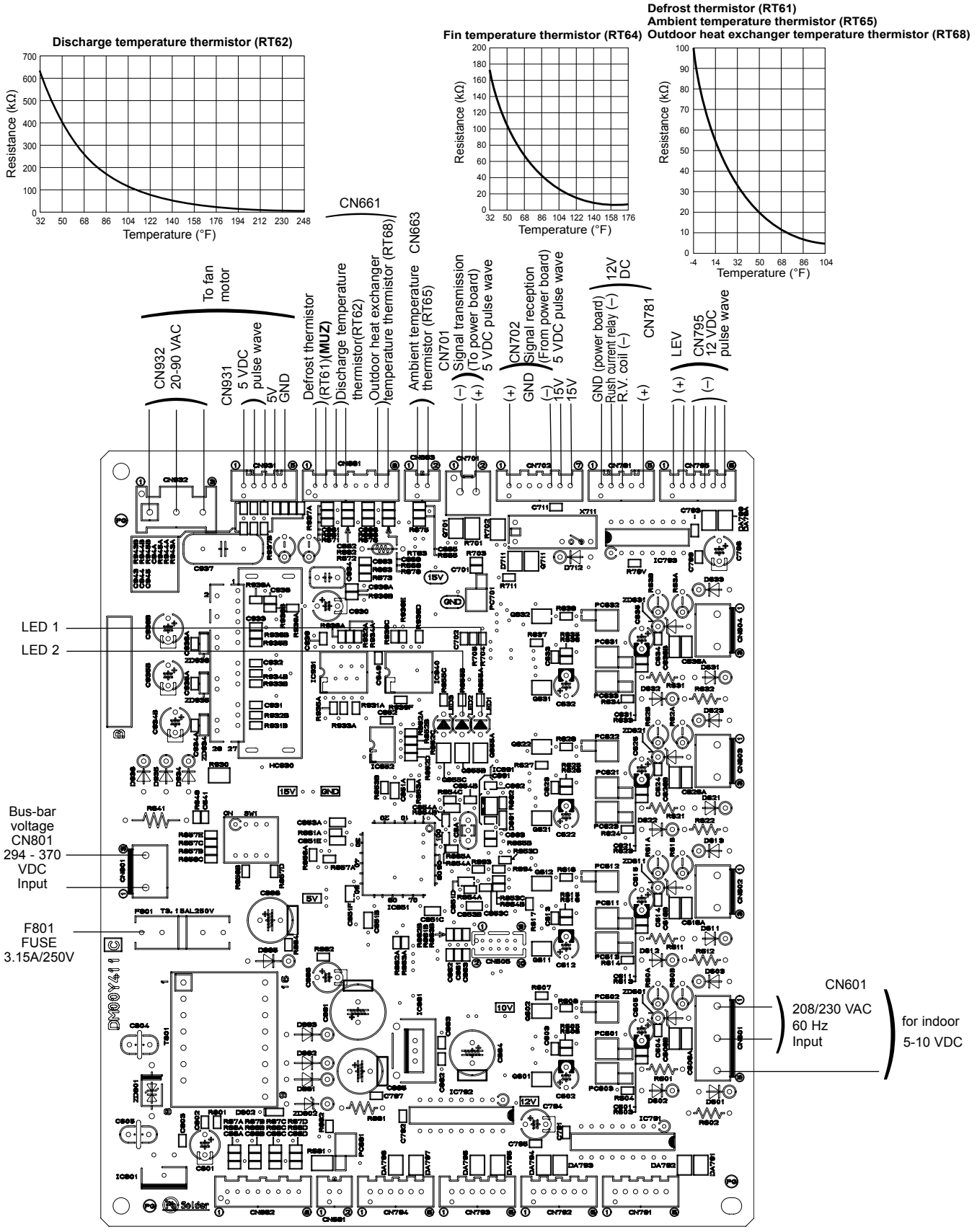


2. Power P.C. board

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

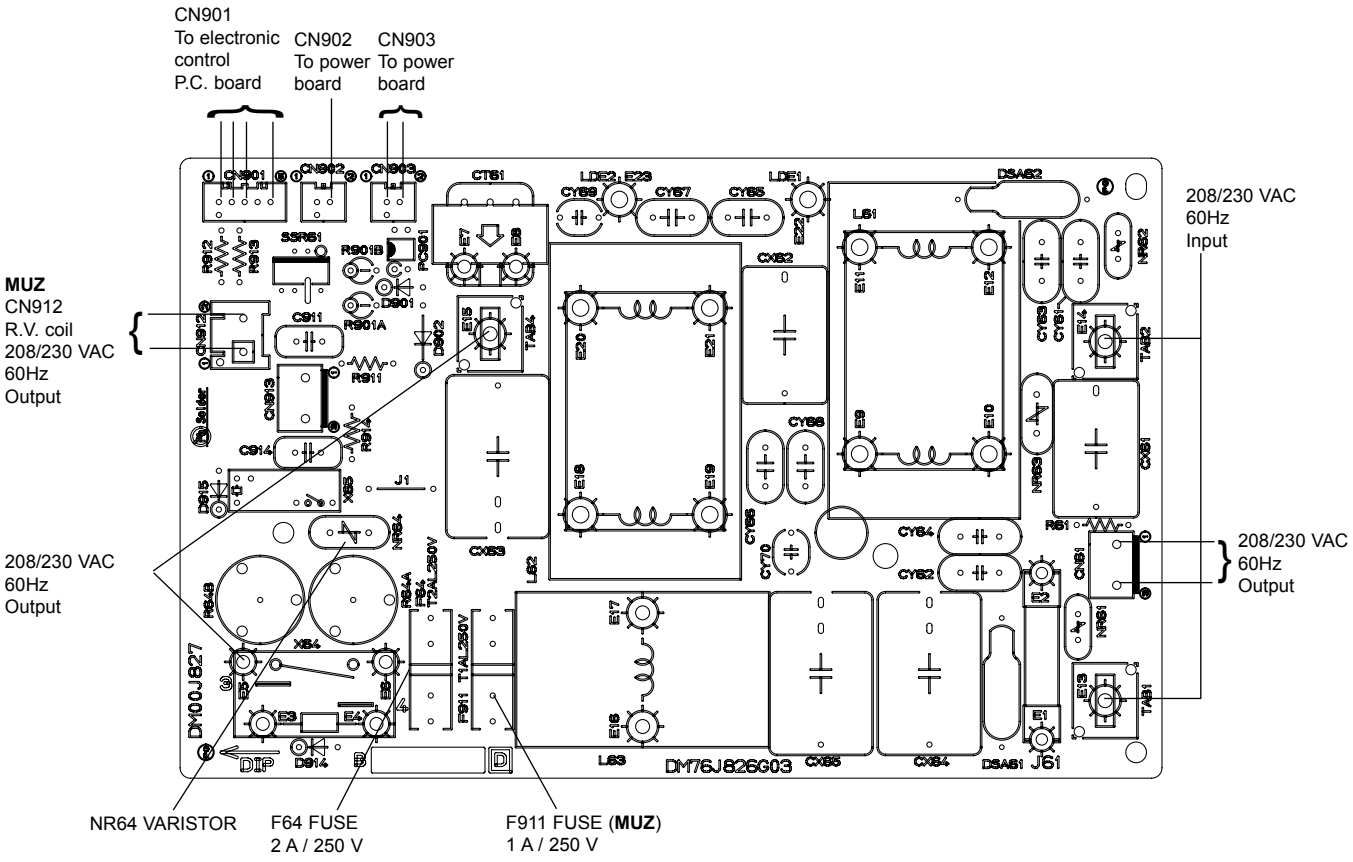


3. Outdoor electronic control P.C. board
MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA



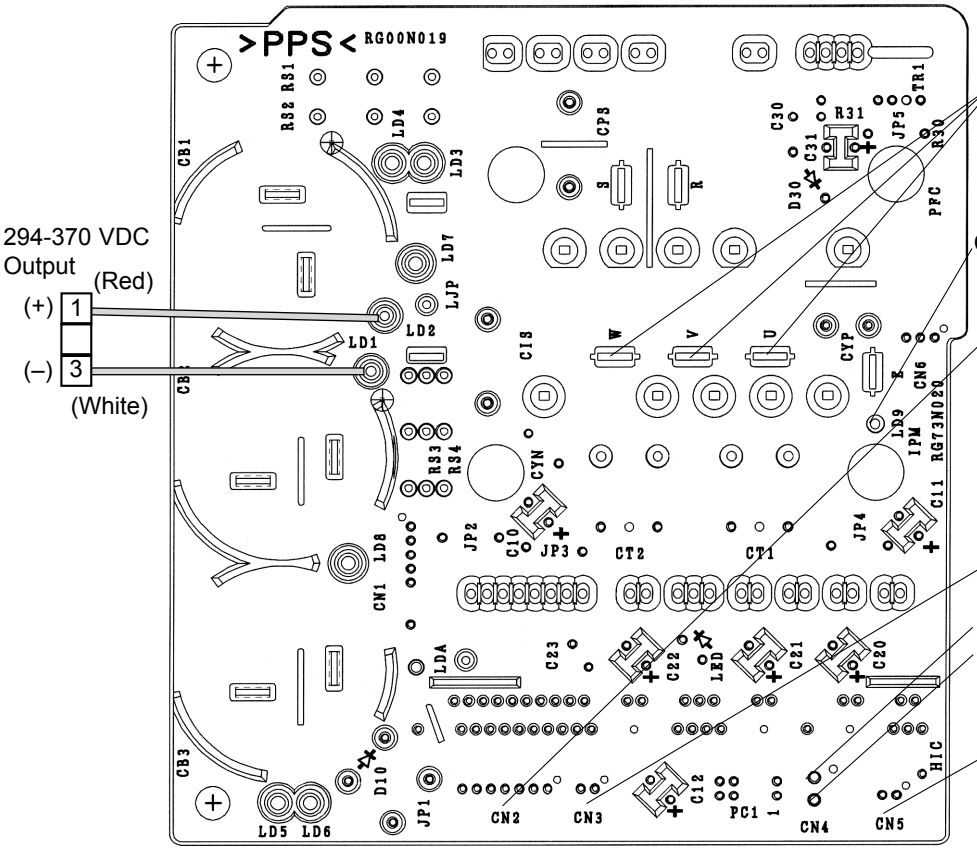
4. Noise filter P.C. board

MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

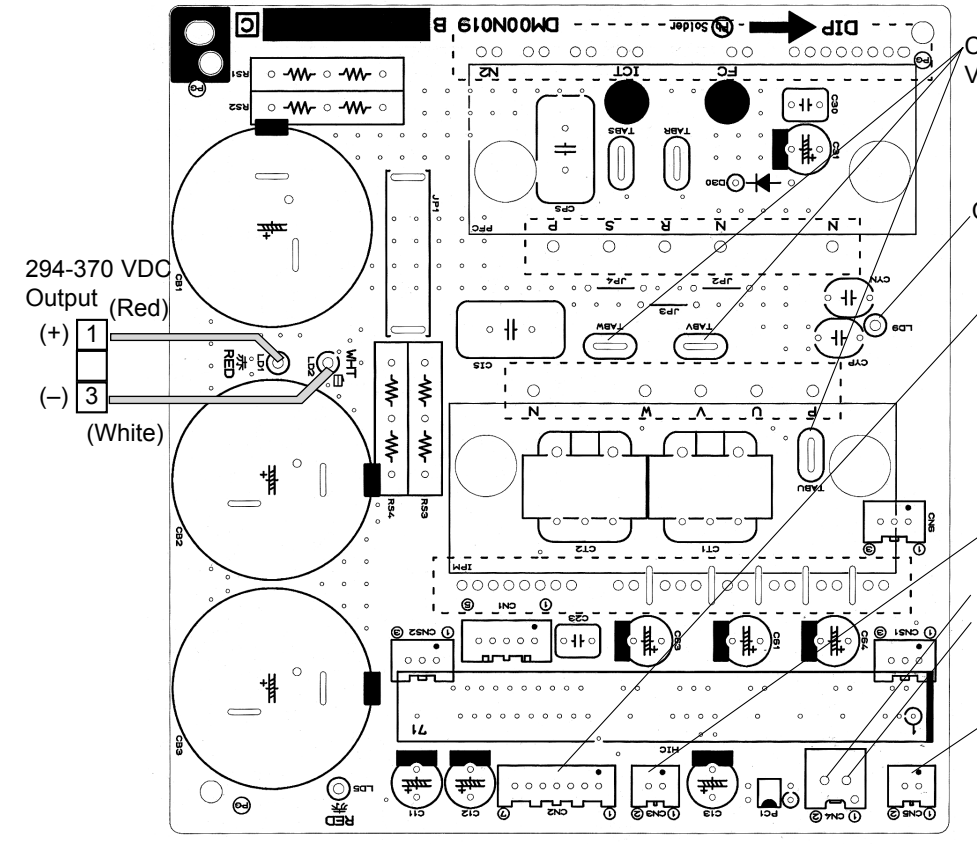


5. Outdoor power board

MUZ-A24NA MUY-A24NA



MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

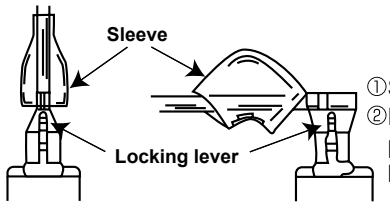


11 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

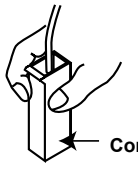
The terminal which has the locking mechanism can be detached as shown below.
There are two types (refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



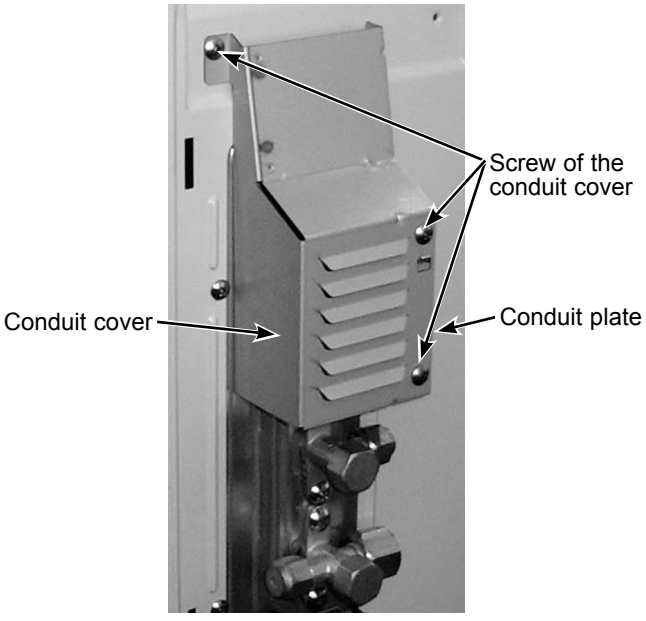
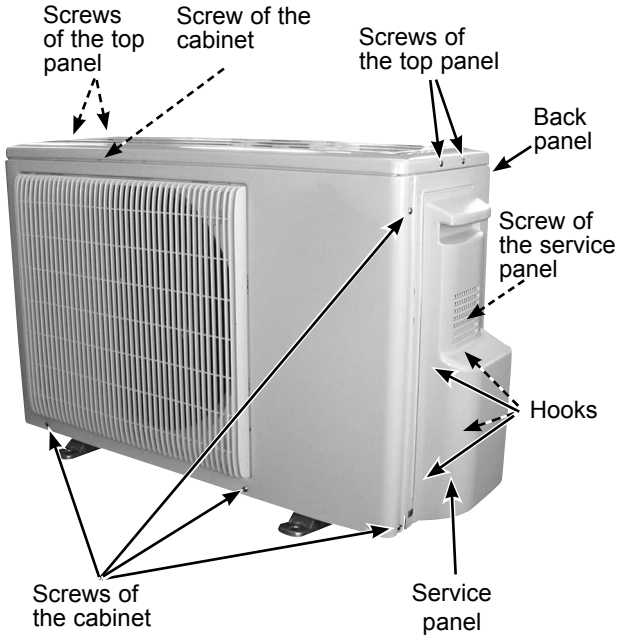
①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

(2) The terminal with this connector has the locking mechanism.



①Hold the sleeve, and pull out the terminal slowly.

11-1. MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screw fixing the service panel. (Photo 1) (2) Pull down the service panel and remove it. (Photo 1) (3) Remove the screws fixing the conduit cover. (Photo 2) (4) Remove the conduit cover. (Photo 2) (5) Disconnect the power supply wire and indoor/outdoor connecting wire. (6) Remove the screws fixing the top panel. (Photo 1) (7) Remove the top panel. (Photo 1) (8) Remove the screws fixing the cabinet. (9) Remove the cabinet. (10) Remove the screws fixing the back panel. (11) Remove the back panel. **Photo 2**  	**Photo 1** 

OPERATING PROCEDURE

2. Removing the inverter assembly, inverter P.C. board and power P.C. board

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)
(3) Disconnect the ground wires (Photo 3), the lead wire to the reactor and the following connectors:
<Power P.C. board>
CN721 (4-way valve coil)
<Inverter P.C. board>
CN931, CN932 (Fan motor)
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN724 (LEV)
(4) Remove the compressor connector (CN61).
(5) Remove the screws fixing the relay panel. (Photo 3)
(6) Remove the inverter assembly. (Photo 3)
(7) Disconnect all connectors and lead wires on the inverter P.C. board. (Photo 4)
(8) Remove the inverter P.C. board from the inverter assembly.
(9) Remove the screw fixing the power P.C. board. (Photo 4)
(10) Disconnect all connectors and lead wires on the power P.C. board.
(11) Remove the power P.C. board from the inverter assembly.

3. Removing R.V. coil (MUZ)

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)
(3) Remove the inverter assembly. (Refer to 2.)
(4) Remove the R.V. coil. (Photo 5)

4. Removing the discharge temperature thermistor and defrost thermistor

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)
(3) Remove the inverter assembly. (Refer to 2.)
(4) Pull out the discharge temperature thermistor from its holder. (Photo 5)
(5) Pull out the defrost thermistor from its holder. (See Photo 6.)

PHOTOS

Photo 3

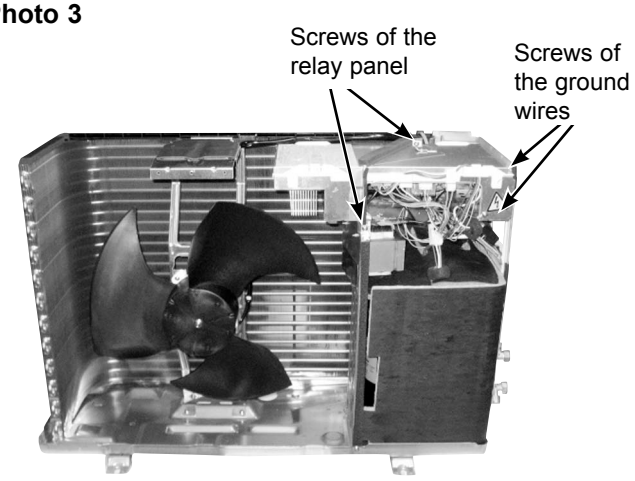


Photo 4

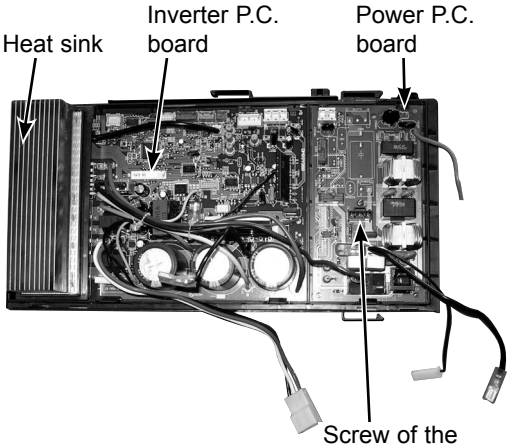
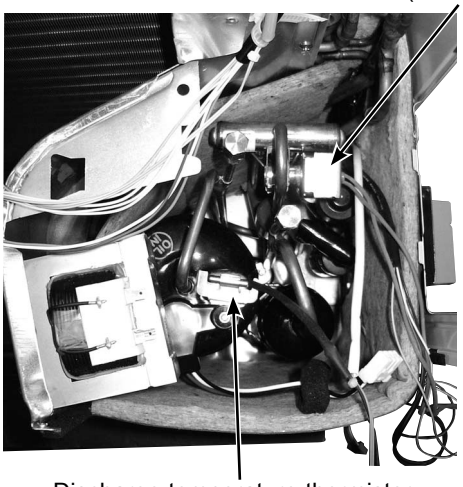
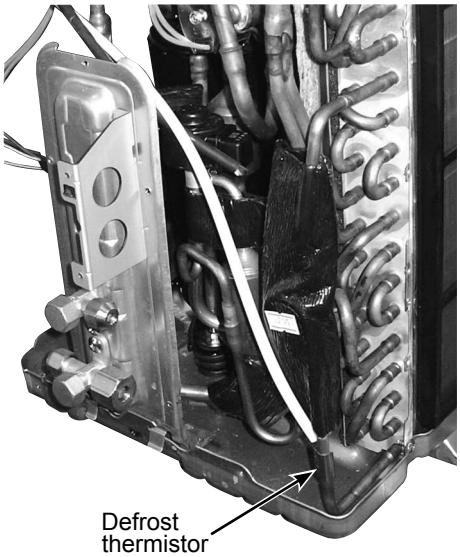
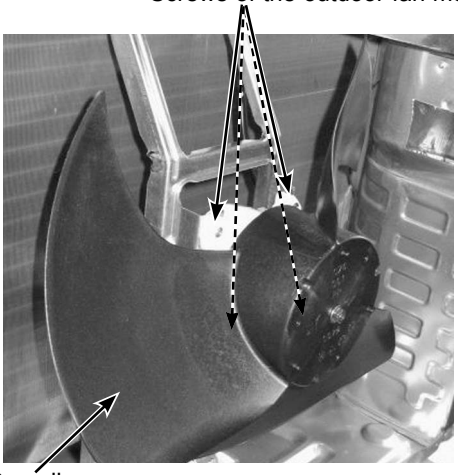
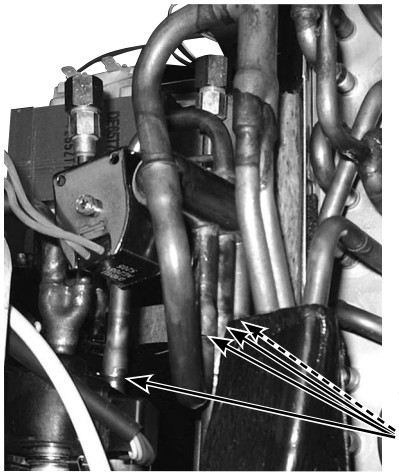
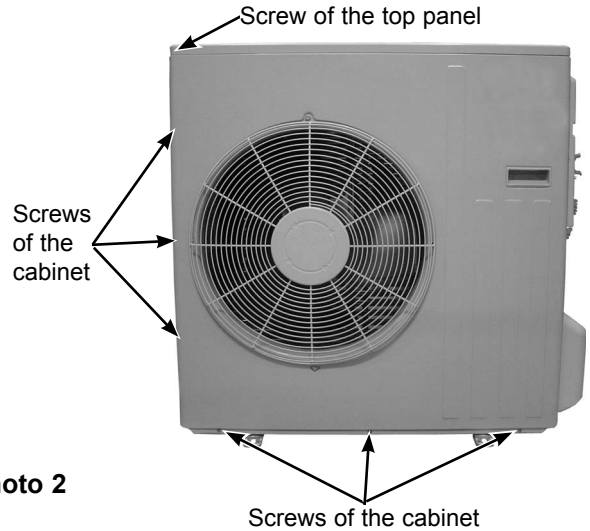
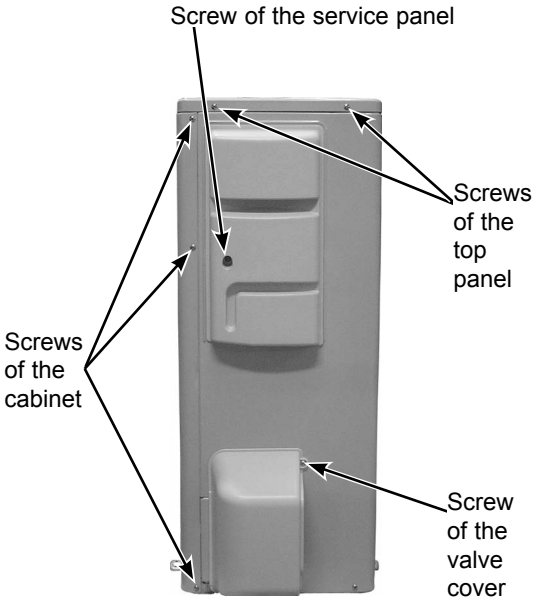
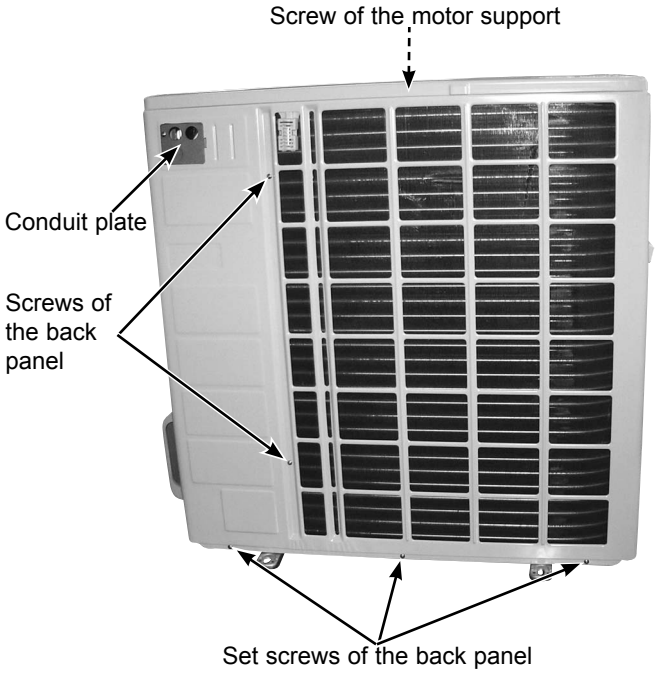


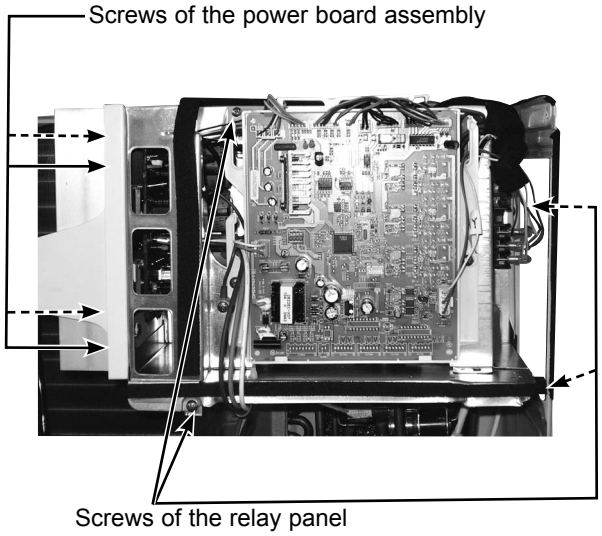
Photo 5

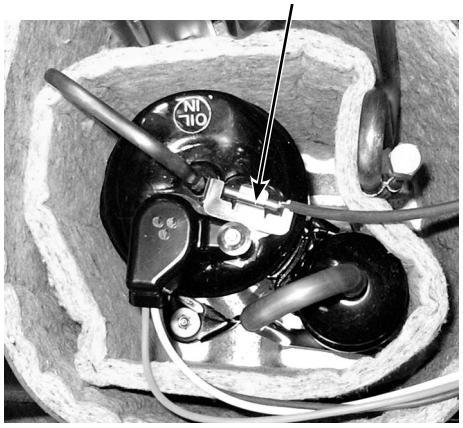
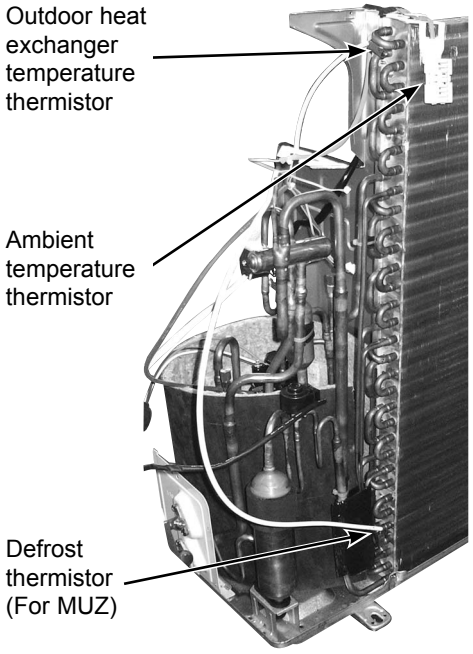
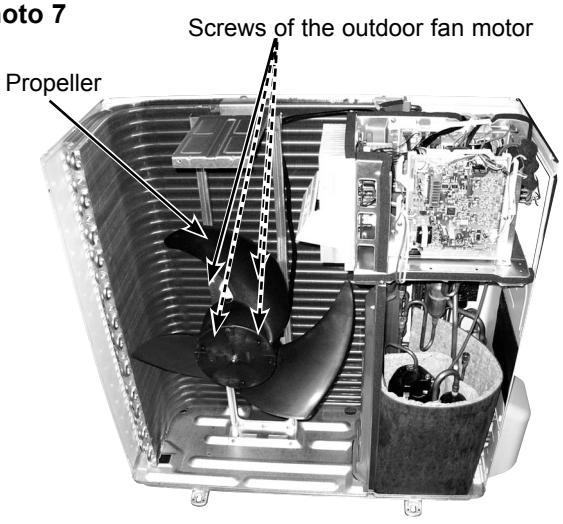


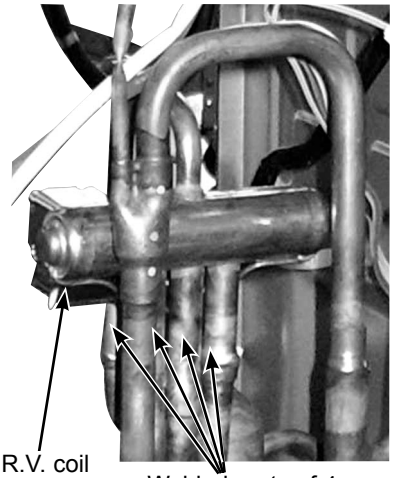
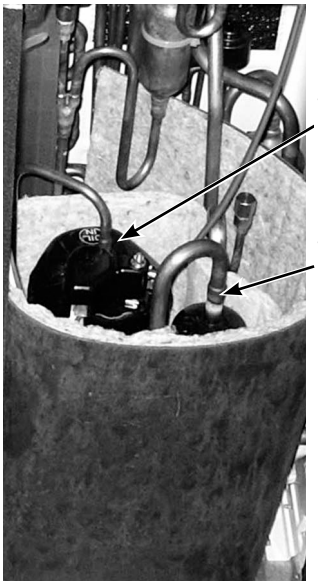
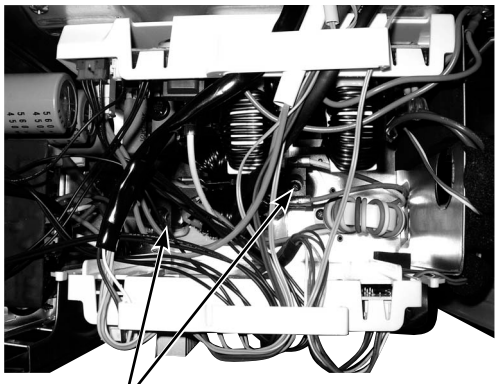
OPERATING PROCEDURE	PHOTOS
5. Removing outdoor fan motor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.) (3) Disconnect the connectors for outdoor fan motor. (4) Remove the propeller nut. (5) Remove the propeller. (6) Remove the screws fixing the fan motor. (Photo 7) (7) Remove the fan motor.	**Photo 6** 
6. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Recover gas from the refrigerant circuit. **NOTE:** Recover gas from the pipes until the pressure gauge shows 0 PSIG. (5) Detach the welded part of the suction and the discharge pipe connected with compressor. (6) Remove the nuts of compressor legs. (7) Remove the compressor. (8) Detach the welded part of pipes connected with 4-way valve. (Photo 8)	**Photo 7**  **Photo 8** 

11-2. MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the service panel. (2) Remove the screws of the top panel. (3) Remove the screw of the valve cover. (4) Remove the service panel. (5) Remove the top panel. (6) Remove the valve cover. (7) Remove the screws of the cabinet. (8) Remove the cabinet. (9) Remove the screws of the back panel. (10) Remove the back panel.	**Photo 1**  **Photo 2** 
Photo 3  	

OPERATING PROCEDURE	PHOTOS
2. Removing the inverter assembly, inverter P.C. board and power board (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Disconnect the following connectors: <Electronic control P.C. board> CN931 and CN932 (Fan motor) CN795 (LEV) CN661 (Discharge temperature thermistor, defrost thermistor (MUZ) and outdoor heat exchanger temperature thermistor) <Noise filter P.C. board> CN912 (4-way valve) (MUZ) (4) Remove the compressor connector. (5) Remove the screws fixing the relay panel. (6) Remove the inverter assembly. (7) Disconnect all connectors and lead wires on the electronic control P.C. board. (8) Remove the electronic control P.C. board from the inverter assembly. (9) Remove the screws fixing the power board assembly. (10) Disconnect all connectors and lead wires on the power board. (11) Remove the power board from the inverter assembly. (12) Disconnect all connectors and lead wires on the noise filter P.C. board. (13) Remove the noise filter P.C. board from the inverter assembly.	**Photo 4** 
3. Removing R.V. coil (MUZ) (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Remove the R.V. coil. (Photo 8)	

OPERATING PROCEDURE	PHOTOS
4. Removing the defrost thermistor (MUZ), discharge temperature thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Pull out the defrost thermistor from its holder. (Photo 6) (MUZ) (5) Pull out the discharge temperature thermistor from its holder. (Photo 5) (6) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 6) (7) Pull out the ambient temperature thermistor from its holder. (Photo 6)	**Photo 5** Discharge temperature thermistor  **Photo 6** 
5. Removing outdoor fan motor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Remove the propeller. (5) Remove the screws fixing the fan motor. (6) Remove the fan motor.	**Photo 7** 

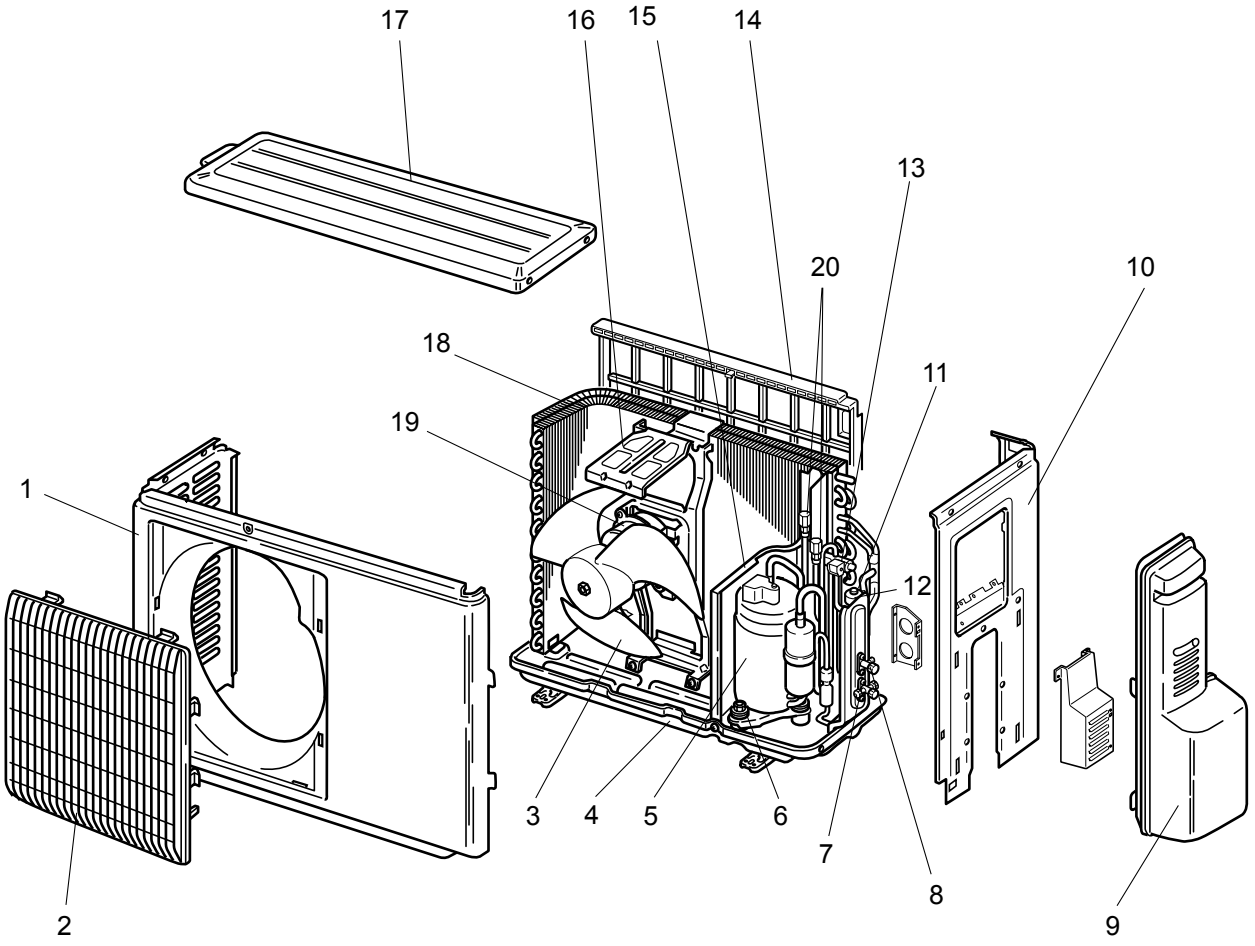
OPERATING PROCEDURE	PHOTOS
6. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Recover gas from the refrigerant circuit. **NOTE:** Recover gas from the pipes until the pressure gauge shows 0 PSIG. (5) Detach the welded part of the suction and the discharge pipe connected with compressor. (Photo 9) (6) Remove the compressor nuts. (7) Remove the compressor. (8) Detach the welded part of 4-way valve and pipe. (Photo 8)	**Photo 8**  **Photo 9** 
7. Removing the reactor (1) Remove the top panel. (Refer to 1.) (2) Disconnect the reactor lead wire. (3) Remove the screws of the reactor, and remove the reactor.	**Photo 10** 

12 PARTS LIST

12-1. PARTS LIST (non-RoHS compliant)

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS

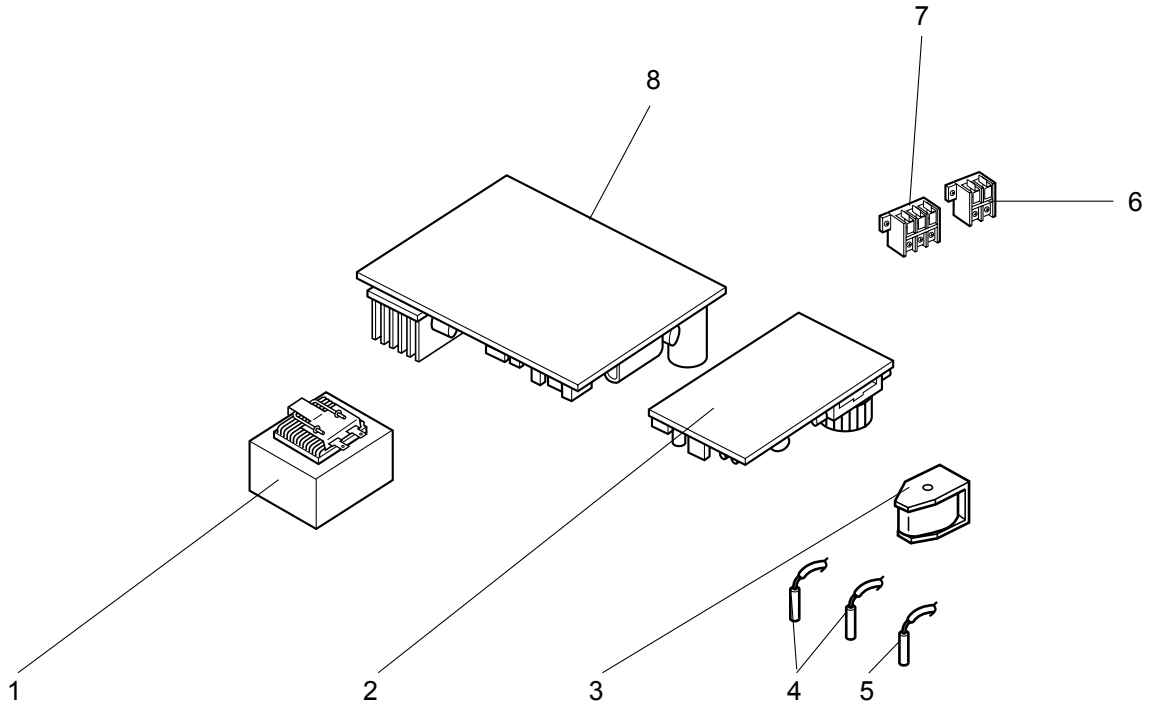


1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit						Remarks
				MUZ-				MUY-		
				A09NA	A12NA	A15NA	A17NA	A15NA	A17NA	
1	E02 927 232	CABINET		1	1	1	1	1	1	
2	E02 927 521	GRILLE		1	1	1	1	1	1	
3	E02 927 501	PROPELLER		1	1	1	1	1	1	
4	E02 927 290	BASE		1	1	1	1	1	1	
5	E02 A54 900	COMPRESSOR	MC	1	1					KNB092FPAH
	E02 A56 900					1	1	1	1	SNB130FPDH
6	E02 065 506	COMPRESSOR RUBBER SET		3	3	3	3	3	3	3 RUBBERS/SET
7	E02 A54 661	STOP VALVE (GAS)		1	1					
	E02 A56 661					1	1	1	1	
8	E02 927 662	STOP VALVE (LIQUID)		1	1	1	1	1	1	
9	E02 A49 245	SERVICE PANEL		1	1	1	1	1	1	
10	E02 A54 233	BACK PANEL		1	1	1	1	1	1	
11	E02 A54 640	EXPANSION VALVE		1	1	1	1	1	1	
12	E02 927 493	EXPANSION VALVE COIL	LEV	1	1	1	1	1	1	
13	E02 A56 961	4-WAY VALVE				1	1	1	1	
	E02 A54 961			1	1					
14	E02 929 523	CONDENSER NET		1	1	1	1	1	1	
15	E02 A54 293	SEPARATOR		1	1	1	1	1	1	
16	E02 929 515	MOTOR SUPPORT		1	1	1	1	1	1	
17	E02 927 297	TOP PANEL		1	1	1	1	1	1	
18	E02 A54 630	OUTDOOR HEAT EXCHANGER		1	1					
	E02 A56 630					1	1			
	E02 A51 630							1	1	
19	E02 A54 301	OUTDOOR FAN MOTOR	MF	1	1	1	1	1	1	RC0J50-□□
20	E02 A49 641	SERVICE PORT		2	2	2	2	2	2	1 PC/SET
㉑	E02 735 936	CAPILLARY TUBE		2	2	2	2	2	2	O.D. 0.118 × I.D.0.071 × 23-5/8

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA
2. OUTDOOR UNIT ELECTRICAL PARTS

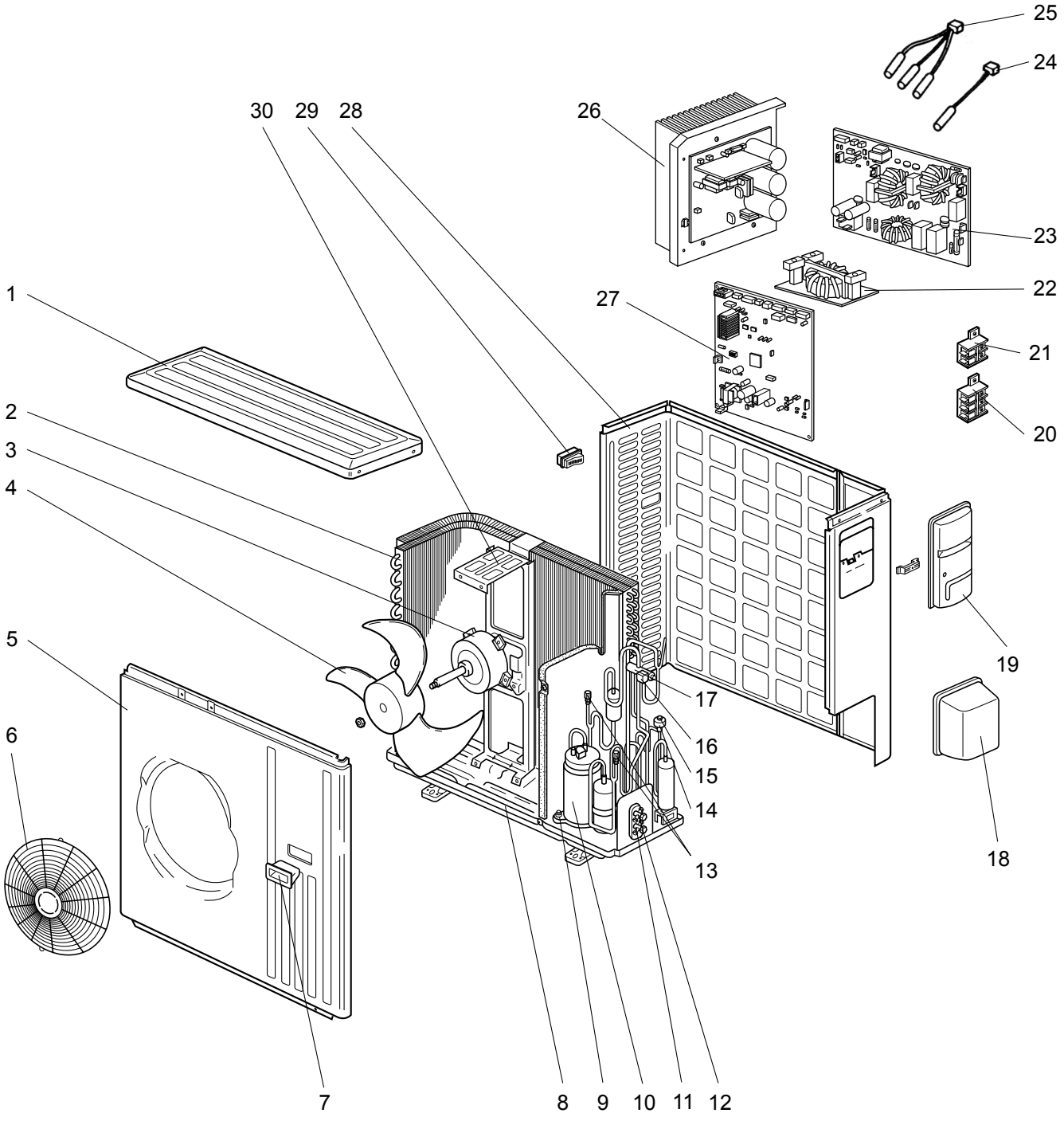


2. OUTDOOR UNIT ELECTRICAL PARTS

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit						Remarks
				MUZ-				MUY-		
				A09NA	A12NA	A15NA	A17NA	A15NA	A17NA	
1	E02 838 337	REACTOR	L61	1	1	1	1	1	1	
2	E02 A54 444	POWER P.C. BOARD		1	1	1	1	1	1	
3	E02 A54 490	R.V. COIL	21S4	1	1	1	1			
4	E02 927 306	THERMISTOR SET	RT61,RT62	1	1	1	1	1	1	DEFROST, DISCHARGE
5	E02 927 308	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	1	1	1	1	
6	E02 A54 374	TERMINAL BLOCK	TB1	1	1	1	1	1	1	2 P
7	E02 A55 374	TERMINAL BLOCK	TB2	1	1	1	1	1	1	3 P
8	E02 A54 451	INVERTER P.C. BOARD		1						Including heat sink and RT64
	E02 A55 451				1					
	E02 A56 451					1		1		
	E02 A57 451						1		1	

MUZ-A24NA MUY-A24NA

3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

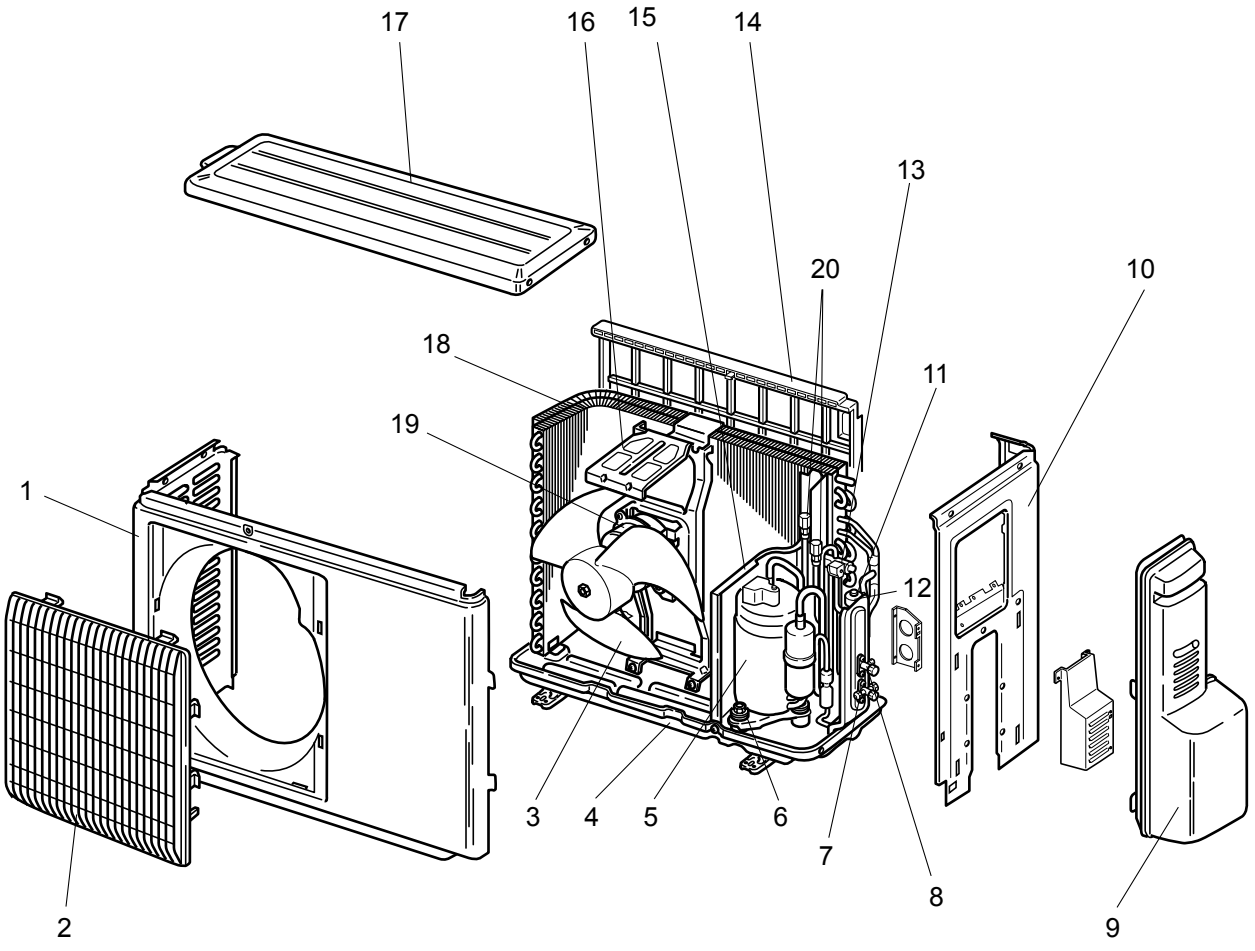
Part numbers that are circled are not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit		Remarks
				MUZ-A24NA	MUY-A24NA	
1	E02 819 297	TOP PANEL		1	1	
2	E02 A53 630	OUTDOOR HEAT EXCHANGER			1	
	E02 A58 630			1		
3	E02 A58 301	OUTDOOR FAN MOTOR	MF	1	1	RC0J60-□□
4	E02 851 501	PROPELLER		1	1	
5	E02 819 232	CABINET		1	1	
6	E02 819 521	FAN GUARD		1	1	
7	E02 819 009	HANDLE		1	1	
8	E02 851 290	BASE		1	1	
9	E02 065 506	COMPRESSOR RUBBER SET		3	3	3 RUBBERS/SET
10	E02 A56 900	COMPRESSOR	MC	1	1	SNB130FPDH
11	E02 A58 661	STOP VALVE (GAS)		1	1	ø5/8
12	E02 821 662	STOP VALVE (LIQUID)		1	1	ø1/4
13	E02 A49 641	SERVICE PORT		2	2	1 PC/SET
14	E02 851 493	EXPANSION VALVE COIL	LEV	1	1	
15	E02 851 640	EXPANSION VALVE		1	1	
16	E02 A58 490	R.V. COIL	21S4	1		
17	E02 A56 961	4-WAY VALVE		1	1	
18	E02 819 650	VALVE COVER		1	1	
19	E02 819 245	SERVICE PANEL		1	1	
20	E02 935 374	TERMINAL BLOCK	TB2	1	1	3 P
21	E02 A53 374	TERMINAL BLOCK	TB1	1	1	2 P
22	E02 851 337	REACTOR	L	1	1	
23	E02 A58 444	NOISE FILTER P.C. BOARD		1		
	E02 A53 444				1	
24	E02 935 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	
25	E02 851 308	THERMISTOR SET	RT61,RT62,RT68	1		DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER
	E02 A53 308		RT62,RT68		1	DISCHARGE OUTDOOR HEAT EXCHANGER
26	E02 A58 440	POWER BOARD		1	1	Including heat sink and RT64
27	E02 A58 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD		1		
	E02 A53 450				1	
28	E02 A58 233	BACK PANEL (OUT)		1	1	
29	E02 817 009	HANDLE		1	1	
30	E02 851 515	MOTOR SUPPORT		1	1	
㉛	E02 851 936	CAPILLARY TUBE (TAPER PIPE)		1	1	O.D. 0.142 × I.D.0.094 × 1-31/32

12-2. RoHS PARTS LIST (RoHS compliant)

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS

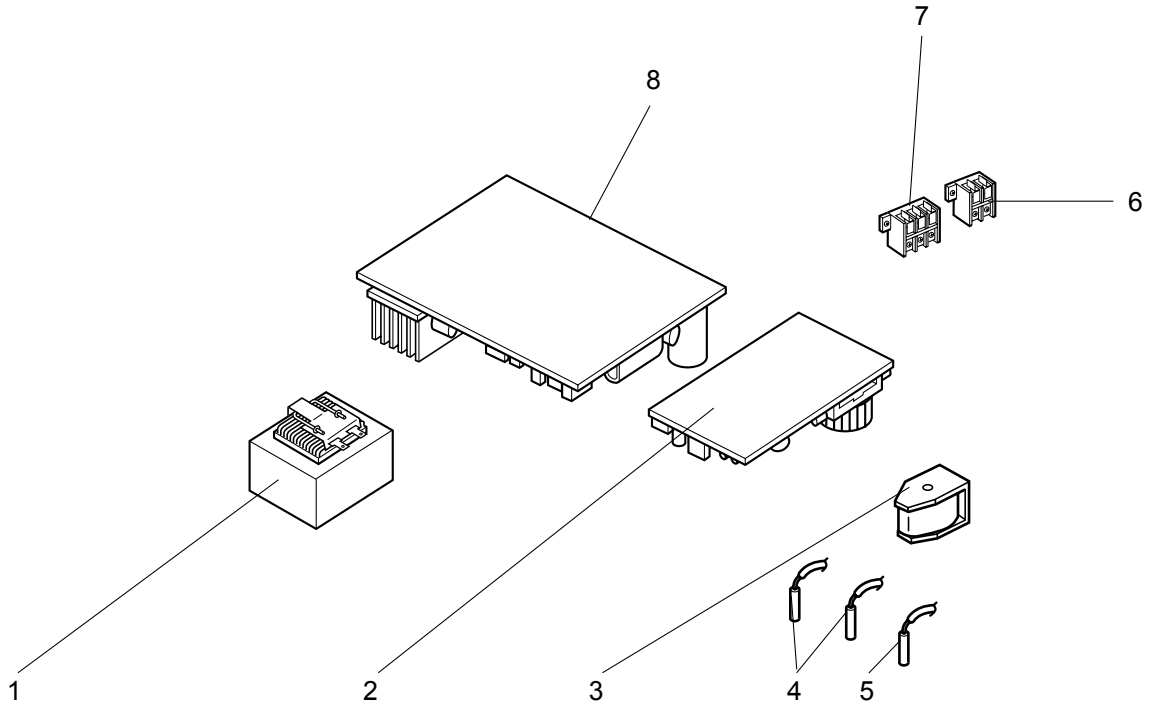


1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

No.	RoHS	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit												Remarks
					MUZ-A										MUY-A		
					09NA				12NA		15NA		17NA		15NA	17NA	
						-1	-U1	-U2		-U1		-U1		-U1			
1	G	E12 927 232	CABINET		1	1	1	1	1	1	1	1	1	1	1	1	
2	G	E12 927 521	GRILLE		1	1	1	1	1	1	1	1	1	1	1	1	
3	G	E12 927 501	PROPELLER		1	1	1	1	1	1	1	1	1	1	1	1	
4	G	E12 927 290	BASE		1	1	1	1	1	1	1	1	1	1	1	1	
5	G	E12 A54 900	COMPRESSOR	MC	1	1	1	1	1	1							KNB092FPAH
	G	E12 A56 900									1	1	1	1	1	1	SNB130FPDH
6	G	E12 065 506	COMPRESSOR RUBBER SET		3	3	3	3	3	3	3	3	3	3	3	3	3 RUBBERS/SET
7	G	E12 A54 661	STOP VALVE (GAS)		1	1	1	1	1	1							ø3/8
	G	E12 A56 661									1	1	1	1	1	1	ø1/2
8	G	E12 927 662	STOP VALVE (LIQUID)		1	1	1	1	1	1	1	1	1	1	1	1	ø1/4
9	G	E12 A49 245	SERVICE PANEL		1	1	1	1	1	1	1	1	1	1	1	1	
10	G	E12 A54 233	BACK PANEL		1	1	1	1	1	1	1	1	1	1	1	1	
11	G	E12 A54 640	EXPANSION VALVE		1	1	1	1	1	1	1	1	1	1	1	1	
12	G	E12 927 493	EXPANSION VALVE COIL	LEV	1	1	1	1	1	1	1	1	1	1	1	1	
13	G	E12 A56 961	4-WAY VALVE								1	1	1	1	1	1	
	G	E12 A54 961			1	1	1	1	1	1							
14	G	E12 929 523	CONDENSER NET		1		1		1	1	1	1	1	1	1	1	
	G	E12 838 523				1		1									
15	G	E12 A54 293	SEPARATOR		1		1		1	1	1	1	1	1	1	1	
	G	E12 B49 293				1		1									
16	G	E12 929 515	MOTOR SUPPORT		1		1		1	1	1	1	1	1	1	1	
	G	E12 927 515				1		1									
17	G	E12 927 297	TOP PANEL		1	1	1	1	1	1	1	1	1	1	1	1	
18	G	E12 A54 630	OUTDOOR HEAT EXCHANGER		1		1		1	1							
	G	E12 A56 630									1	1	1	1			
	G	E12 A51 630													1	1	
	G	E12 B49 630				1		1									
19	G	E12 A54 301	OUTDOOR FAN MOTOR	MF	1	1	1	1	1	1	1	1	1	1	1	1	RC0J50-□□
20	G	E12 A49 641	SERVICE PORT		2	2	2	2	2	2	2	2	2	2	2	2	1 PC/SET
㉑	G	E12 735 936	CAPILLARY TUBE		2		2		2	2	2	2	2	2	2	2	O.D. 0.118 × I.D.0.071 × 23-5/8
	G	E12 927 937				1		1									O.D. 0.118 × I.D.0.079 × 9-7/16

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA
2. OUTDOOR UNIT ELECTRICAL PARTS

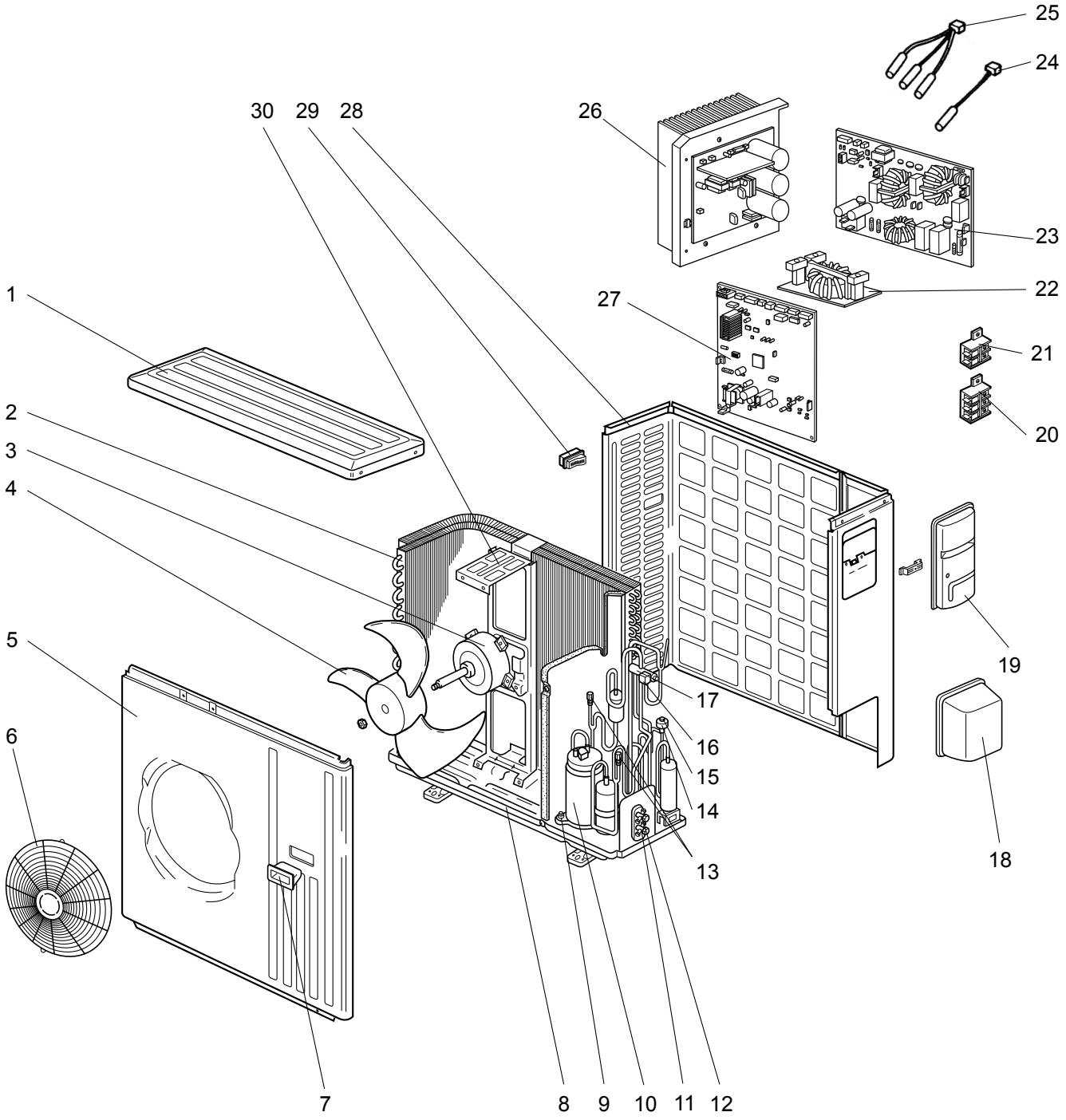


2. OUTDOOR UNIT ELECTRICAL PARTS

No.	RoHS	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit												Remarks
					MUZ-A										MUY-A		
					09NA				12NA		15NA		17NA		15NA	17NA	
						-1	-U1	-U2		-U1		-U1		-U1			
1	G	E12 838 337	REACTOR	L61	1	1	1	1	1	1	1	1	1	1	1	1	
2	G	E12 A54 444	POWER P.C. BOARD		1	1	1	1	1	1	1	1	1	1	1	1	
3	G	E12 A54 490	R.V. COIL	21S4	1	1	1	1	1	1	1	1	1	1			
4	G	E12 927 306	THERMISTOR SET	RT61,RT62	1	1	1	1	1	1	1	1	1	1	1	1	DEFROST, DISCHARGE
5	G	E12 927 308	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	1	1	1	1	1	1	1	1	1	1	
6	G	E12 A54 374	TERMINAL BLOCK	TB1	1	1	1	1	1	1	1	1	1	1	1	1	2 P
7	G	E12 A55 374	TERMINAL BLOCK	TB2	1	1	1	1	1	1	1	1	1	1	1	1	3 P
8	G	E12 A54 451	INVERTER P.C. BOARD		1												Including heat sink and RT64
	G	E12 B49 451				1											
	G	E12 A55 451							1								
	G	E12 A56 451									1				1		
	G	E12 A57 451											1			1	
	G	E12 B09 451					1										
	G	E12 B51 451						1									
	G	E12 B10 451								1							
	G	E12 B11 451										1					
	G	E12 B12 451												1			

MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA

3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

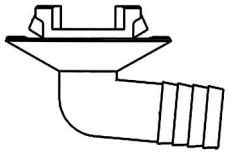
Part numbers that are circled are not shown in the illustration.

No.	RoHS	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit									Remarks
					MUZ-						MUY-			
					A24NA				GA24NA		A24NA		GA 24NA	
						-1	-U1	-U2		-U1		-1		
1	G	E12 819 297	TOP PANEL		1	1	1	1	1	1	1	1	1	
2	G	E12 A53 630	OUTDOOR HEAT EXCHANGER								1	1		
	G	E12 A58 630			1	1	1	1						
	G	E12 E34 630							1	1				
	G	E12 E35 630											1	
3	G	E12 A58 301	OUTDOOR FAN MOTOR	MF	1	1	1	1			1	1		RC0J60-□□
	G	E12 E34 301							1	1			1	RC0J77-□□
4	G	E12 851 501	PROPELLER		1	1	1	1	1	1	1	1	1	
5	G	E12 819 232	CABINET		1	1	1	1	1	1	1	1	1	
6	G	E12 819 521	FAN GUARD		1	1	1	1	1	1	1	1	1	
7	G	E12 819 009	HANDLE		1	1	1	1	1	1	1	1	1	
8	G	E12 851 290	BASE		1	1	1	1	1	1	1	1	1	
9	G	E12 065 506	COMPRESSOR RUBBER SET		3		3				3			3 RUBBERS/SET
	G	E12 C34 506				3		3	3	3		3	3	
10	G	E12 A56 900	COMPRESSOR	MC	1	1	1	1			1	1		SNB130FPDH
	G	E12 E34 900							1	1			1	SNB130FQBH
11	G	E12 A58 661	STOP VALVE (GAS)		1	1	1	1	1	1	1	1	1	ø5/8
12	G	E12 821 662	STOP VALVE (LIQUID)		1	1	1	1	1	1	1	1	1	ø1/4
13	G	E12 A49 641	SERVICE PORT		2	2	2	2	2	2	2	2	2	1 PC/SET
14	G	E12 851 493	EXPANSION VALVE COIL	LEV	1	1	1	1	1	1	1	1	1	
15	G	E12 851 640	EXPANSION VALVE		1	1	1	1	1	1	1	1	1	
16	G	E12 A58 490	R.V. COIL	21S4	1	1	1	1	1	1				
17	G	E12 A56 961	4-WAY VALVE		1	1	1	1	1	1	1	1	1	
18	G	E12 819 650	VALVE COVER		1	1	1	1	1	1	1	1	1	
19	G	E12 819 245	SERVICE PANEL		1	1	1	1			1	1		
	G	E12 D20 245							1	1			1	
20	G	E12 935 374	TERMINAL BLOCK	TB2	1	1	1	1	1	1	1	1	1	3 P
21	G	E12 A53 374	TERMINAL BLOCK	TB1	1	1	1	1	1	1	1	1	1	2 P
22	G	E12 851 337	REACTOR	L	1	1	1	1			1	1		
	G	E12 A87 337							1	1			1	
23	G	E12 A58 444	NOISE FILTER P.C. BOARD		1	1	1	1	1	1				
	G	E12 A53 444									1	1	1	
24	G	E12 935 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	1	1	1	1	1	1	1	
25	G	E12 851 308	THERMISTOR SET	RT61,RT62,RT68	1	1	1	1	1	1				DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER
	G	E12 A53 308		RT62,RT68							1	1	1	DISCHARGE OUTDOOR HEAT EXCHANGER
26	G	E12 A58 440	POWER BOARD		1	1	1	1			1	1		Including heat sink and RT64
	G	E12 E34 440							1	1			1	
27	G	E12 A58 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD		1	1								
	G	E12 A53 450									1	1		
	G	E12 B13 450					1	1						
	G	E12 E34 450							1					
	G	E12 E37 450								1				
	G	E12 E35 450											1	
28	G	E12 A58 233	BACK PANEL (OUT)		1		1				1			
	G	E12 D91 233				1		1				1		
	G	E12 E34 233							1	1			1	
29	G	E12 817 009	HANDLE		1	1	1	1	1	1	1	1	1	
30	G	E12 851 515	MOTOR SUPPORT		1	1	1	1	1	1	1	1	1	
㉛	G	E12 851 936	CAPILLARY TUBE (TAPER PIPE)		1	1	1	1	1	1	1	1	1	O.D. 0.142 × I.D.0.094 × 1-31/32

13 OPTIONAL PARTS

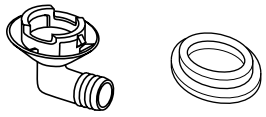
13-1. DRAIN SOCKET

Model	Part No.
MUZ-A09/12/15/17NA MUY-A15/17NA	MAC-851DS



13-2. DRAIN SOCKET ASSEMBLY

Model	Part No.
MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA	MAC-811DS



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Distributed in Mar. 2009. No. OB451 REVISED EDITION-E 4
Distributed in May. 2008. No. OB451 REVISED EDITION-D 6
Distributed in Nov. 2007. No. OB451 REVISED EDITION-C 7
Distributed in Feb. 2007. No. OB451 REVISED EDITION-B 7
Distributed in Sep. 2006. No. OB451 REVISED EDITION-A 7
Distributed in Apr. 2006. No. OB451 7
Made in Japan

New publication, effective Mar. 2009
Specifications subject to change without notice.